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von M.Sc. Katharina Löhr

Conflict Prevention and Management (CPM) System in Transdisciplinary Research Collaborations: Potential and Constraints.

The case of
an international
food security
research project.

Präsidentin der Humboldt-Universität zu Berlin
Prof. Dr.-Ing. Dr. Sabine Kunst
Dekan der Lebenswissenschaftlichen Fakultät
Prof. Dr. Bernhard Grimm

Gutachter:

1. Prof. Dr. Klaus Müller (Humboldt-Universität zu Berlin)
2. Prof. Dr. Lars Kirchhoff (Europa Universität Viadrina, Frankfurt/Oder)

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Dissertation submitted by Katharina Löhr

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Summary

Recognizing that no single discipline or institute alone can find solutions to global challenges, a shift toward interconnected and global research approaches is occurring, thus increasing the number of collaborative research initiatives applying inter- and trans-disciplinary approaches. This is mirrored not just in the global development agenda (Agenda 2030) but also in the funding policies of national and international public funding bodies.

While there is awareness for the grand challenges and institutional structures facilitating joint action, little attention is given to the operational details. However, this is essential, as research collaborations in sustainable development are complex organizational settings prone to conflict, made up of diverse members from multiple countries, institutions, and disciplines. To prevent destructive conflict, including complete project failure, research on collaborative team work, as well as tools to facilitate collaboration and project success, is needed. Effectively functioning projects can find solutions to grand societal challenges.

Thus, the objective of this dissertation is to facilitate the operational functioning of transdisciplinary research projects by analyzing the design and effects of a conflict management system in such a research environment. Because it exemplifies the complexity of collaborative research projects, a transdisciplinary research project on food security serves as the case study. This dissertation not only helps close the knowledge gap on how transdisciplinary research projects operate, but it also advances research on conflict management systems by transferring the approach to a new type of organization.

The **introduction** of this dissertation presents transdisciplinarity as collaborative research approach prominent in sustainable development, discusses its conflict potential and introduces conflict management systems as possible tool to support the organizational functioning of such research project organization. It also outlines this dissertation's objective with its connected hypotheses and research questions. Chapter 2 introduces the reader to organizational development as the **theoretical frame** of the dissertation.

The main body of this dissertation (chapter 3) consists of four peer-reviewed papers. The **first and second papers** provide the foundation for this dissertation by analyzing the drivers making transdisciplinary research projects prone to conflict, if not failure. The interrelations between the different drivers are also established. Paper two links the organizational characteristics of transdisciplinary research projects to conflict management systems. It analyzes the implications of project structure on conflict management system design. Thus, it provides the basis for designing conflict management systems for transdisciplinary research projects. **Paper three** tests the transfer of a conflict management system model – the Viadrina component model – from a domestic, mainly business, environment

to an international and transdisciplinary research setting, using a food security research project as its case study. The research finds that to fit this research environment, conceptual modifications to the Viadrina model are required. A component of conflict prevention is added to the model and conflict management structures decentralized. **Paper four** evaluates the effects of the conflict prevention and management system in the case study in order to draw conclusions about the use of such systems in future projects. Results show positive effects of the system on project members' communication and conflict behavior as well as on interpersonal trust and perceptions of work effectiveness. The positive support is found across all working positions, with a great majority recommending the use of such system in other projects. This suggests that conflict prevention and management systems are a tool benefitting work collaboration. This dissertation's **concluding chapter** summarizes the results, discusses implications, as well as identifies the limitations of the studies and prospects for future research.



Zusammenfassung

Es wird zunehmend deutlich, dass weder eine einzelne wissenschaftliche Disziplin noch ein einzelnes Forschungsinstitut Lösungen für globale Probleme zu finden vermag; das Ergebnis ist ein Wandel hin zu vernetzten, globalen Forschungsansätzen, der mit einem Anstieg von Verbundprojekten mit inter- und transdisziplinärem Ansatz einhergeht. Diese Entwicklung schlägt sich nicht nur in der globalen Entwicklungsagenda (Agenda 2030) nieder, sondern auch in den Förderpolitiken nationaler und internationaler Fördergeber.

Obschon ein Bewusstsein für die schwierige Aufgabe besteht, institutionelle Strukturen so zu gestalten, dass sie sich förderlich auf die Zusammenarbeit auswirken, wird der praktischen Umsetzung kaum Aufmerksamkeit geschenkt. Doch diese ist insbesondere bei Forschungsverbünden zur nachhaltigen Entwicklung von entscheidender Bedeutung, da sie mit ihrer komplexen organisatorischen Struktur – mit Beteiligten unterschiedlicher Nationalität und aus verschiedenen Institutionen und Disziplinen – ausgesprochen anfällig für Konflikte sind. Um destruktiven und das Projekt gefährdenden Konflikten vorzubeugen, werden neben Studien zur effektiven Teamarbeit auch Instrumente benötigt, die die Zusammenarbeit und den Erfolg des Projektes fördern. Nur wenn Projekte effektiv funktionieren, können sie Lösungen für große gesellschaftliche Herausforderungen finden.

Die vorliegende Dissertation verfolgt das Ziel, zur praktischen Funktionsfähigkeit transdisziplinärer Forschungsprojekte beizutragen, indem sie die Konzeption und die Wirksamkeit von Konfliktmanagement-Systemen in derartigen Forschungsprojekten untersucht. Als Fallbeispiel dient ein transdisziplinäres Forschungsprojekt zur Ernährungssicherheit, das exemplarisch für die Komplexität von Verbundprojekten steht. Die vorliegende Dissertation soll nicht nur dazu beitragen, die Wissenslücke über die Funktionsweise transdisziplinärer Forschungsprojekte zu schließen, sondern zudem einen Beitrag zur Forschung zu Konfliktmanagement-Systemen leisten, indem solch ein System in eine weitere Organisationsstruktur übertragen wird.

In der **Einleitung** wird zunächst die Bedeutung dargestellt, die der Transdisziplinarität als Mittel der Verbundforschung für Projekte der nachhaltigen Entwicklung zukommt, das Konfliktpotenzial in derartigen Projekten erörtert und das Konzept des Konfliktmanagement-Systems vorgestellt, das zu einer wirkungsvollen Organisation eines Verbundprojektes beizutragen vermag. Darüber hinaus wird in der Einleitung allgemein die Zielsetzung der Dissertation mit den zugrundeliegenden Hypothesen und Forschungsfragen formuliert. Dem **theoretischen Rahmen** der Studie widmet sich Kapitel 2, in dem der/die Leser*in mit dem Konzept der Organisationsentwicklung vertraut gemacht wird.

Der zentrale Teil der Dissertation (Kapitel 3) beruht auf vier Einzelstudien („peer reviewed“). Die **ersten beiden Studien** bilden das Fundament der Dissertation. In ihnen werden die wesentlichen Faktoren dargelegt, die in transdisziplinären Forschungsprojekten für Konflikte bis hin zum Scheitern verantwortlich sind, und die Wechselwirkungen zwischen diesen Faktoren untersucht. Der Schwerpunkt der zweiten Studie liegt dabei auf der Verbindung der spezifischen Organisation transdisziplinärer Forschungsprojekte mit Konfliktmanagement-Systemen. Gefragt wird, welche Auswirkungen die Projektstruktur auf die Konzeption von Konfliktmanagement-Systemen hat, um davon ausgehend eine Grundlage für die Konzeption von Konfliktmanagement-Systemen im Rahmen von transdisziplinären Forschungsprojekten zu formulieren. Die **dritte Studie** befasst sich am Beispiel eines Forschungsprojektes zur Ernährungssicherheit mit der Übertragung eines spezifischen Konfliktmanagement-Modells – des Viadrina-Komponentenmodells – aus seinem ursprünglich nationalen, wirtschaftlich geprägten Umfeld in ein internationales, transdisziplinäres Forschungsumfeld. Die Studie zeigt, dass konzeptionelle Veränderungen am Viadrina-Modell erforderlich sind, um es an das Forschungsprojekt anzupassen. Hierzu wird das Modell durch eine Komponente der Konfliktprävention ergänzt, zugleich werden die Konfliktmanagementstrukturen dezentralisiert. In der **vierten Studie** werden die Auswirkungen des Konfliktpräventions- und Konfliktmanagementsystems in dem konkreten Fallbeispiel evaluiert, um Erkenntnisse für den Einsatz derartiger Systeme in künftigen Projekten zu gewinnen. Es zeigen sich positive Effekte des Systems auf die Kommunikation und das Konfliktverhalten der Projektbeteiligten, aber auch auf das Vertrauen untereinander und die wahrgenommene Arbeitseffektivität. Die positive Unterstützung lässt sich quer durch alle Arbeitspositionen ausmachen, und eine große Mehrheit der Beteiligten empfiehlt den Einsatz derartiger Systeme in anderen Projekten. Das Fazit lautet mithin, dass Konfliktpräventions- und Konfliktmanagementsysteme ein wirksames Instrument zur Förderung der Zusammenarbeit sind. Im **abschließenden Kapitel** der Dissertation werden die Ergebnisse zusammengefasst und mögliche Folgerungen diskutiert, aber auch die Grenzen der Studie benannt und ein Ausblick auf künftige Forschungen gegeben.

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List of Publications

This dissertation is based on the following four peer-reviewed publications. The order reflects their sequence in this dissertation.

LÖHR, K., BONATTI, M., HOMEN, L., SCHLINDWEIN, S. & SIEBER, S. 2018. Operational challenges in collaborative research projects: addressing conflict multidimensionality. *Kybernetes*, Vol. 47 Issue: 6, pp.1074-1089, DOI: <https://doi.org/10.1108/K-04-2017-0124>.

LÖHR, K., HOCHMUTH, C., GRAEF, F., WAMBURA, J. & SIEBER, S. 2017a. Conflict management programs in trans-disciplinary research projects: the case of a food security project in Tanzania. *Food Security*. DOI: 10.1007/s12571-016-0643-1.

LÖHR, K., GRAEF, F., BONATTI, M., MAHOO, M., WAMBURA, J. A. & SIEBER, S. 2017b. Conflict management systems for large scientific research projects. *International Journal of Conflict Management*, 28, 322–345. DOI: <http://dx.doi.org/10.1108/IJCMA-04-2016-0022>.

LÖHR, K., WEINHARDT, M., GRAEF, F. & SIEBER, S. 2017c. Enhancing collaboration and effectiveness in collaborative research projects through conflict management systems: Analyzing the case of a food security project. *Organizational Dynamics*. DOI: 10.1016/j.orgdyn.2017.10.004

Further (co-) publications

LÖHR, K., HOCHMUTH, C., & SIEBER, S. 2017d. Conflict Prevention and Management Systems in Collaborative Research Projects: a guide for design and implementation, Müncheberg, ZALF. Available at: http://www.zalf.de/de/forschung_lehre/publikationen/Documents/Broschueren/CPM-System%20in%20Collaborative%20Research%20Projects_A%20guide_%202017.pdf (in German and English)

GRAEF, F. MUTABAZI, K.D., SIEBER, S., ASCH, F. BASHIR, M., BONATTI, M., BRÜNTRUP, M., GORNOTT, C., HERRMANN, L., HERRMANN, R., KABURIRE, L., KAHIMBA, F., KIMARO, A., KUNTOSCH, A., KÖNIG, H., LAGWEN, P., LANA, M., LAMBERT, C., LEVY, C., **LÖHR, K.**, MAEDA, C., MBWANA, H., MCHAU, D., MNIMBO, M.T., MUNDER, S., MWINUKA, L., NGWENYA, P., NICKSON, E., NKONYA, E., SAIDIA, P., SCHÄFER, M.P., SCHINDLER, J., SILAYO, V., UCKERT, G.,

- WAMBURA, J., & WILLIAM L. 2018. Multi-disciplinary North-South collaboration in participatory action research on food value chains: a German-Tanzanian case study on perceptions, experiences and challenges. *Systemic Practice and Action Research*, <https://doi.org/10.1107/s11213-018-9458-7>
- SCHLINDWEIN, I., BONATTI, M., **LÖHR, K.**, RYBAK, C. & SIEBER, S. Understanding gender inequalities in the social contexts of food and nutrition insecurity in Tanzania. *African Identities*. (submitted)
- LÖHR, K.** 2014. Erfahrungsberichte aus entwicklungspolitischen Freiwilligendiensten – Bücher als Medium für die entwicklungspolitische Bildungsarbeit?. *Voluntaris*, 2(2), 86–92.

VI

Abbreviations and Acronyms

ACT	Agricultural Council of Tanzania
ARI	Agricultural Research Institutes
B	Budget
BMBF	German Ministry for Education and Research
BMZ	German Ministry of Economic Development and Cooperation
CGIAR	Research Program on Agriculture for Nutrition and Health
CIAT	International Center for Tropical Agriculture
CPM-System	Conflict Prevention and Management-System
D	Duration
DIE	German Development Institute
DITSL	German Institute for Tropical and Subtropical Agriculture
ES	E-mail Survey
EU	European Union
FG	Focus Group
GlobeE	BMBF funding initiative (Securing the Global Food Supply) Initiative
H	Hypothesis
HU	Humboldt-University Berlin
ICRAF	World Agroforestry Centre
IDI	Individual Interviews
IFPRI	International Food Policy Research Institute
IUW	Leibniz University Hannover
MDG	Millennium Development Goal
MVIWATA	Network of Small-Scale Farmers' Groups
OC	Organizational Composition
OD	Organizational Development
OS	Online Survey
PIK	Potsdam Institute for Climate Impact Research
REDRESS	Name of Mediation Program
RQ	Research Question

SDG	Sustainable Development Goal
SPIDR	Society of Professionals in Dispute Resolution
SUA	Sokoine University of Agriculture
TFC	Tanzania Federation of Cooperatives
Trans-SEC	Name of Case Study Project
UHOH	University of Hohenheim
UN	United Nations
WCED	World Commission on Environment and Development
WoCa	World Café
ZALF	Leibniz-Centre for Agricultural Landscape Research

1

Introduction

1.1 Transdisciplinary Research

1.1.1 Transdisciplinarity for Sustainable Development

Collaborative actions have gained significant importance, particularly within the framework for sustainable development. Sustainable development is committed to meeting present and future needs impartially, while balancing the economic, ecological, and social dimensions (Griggs et al., 2013, Hopwood et al., 2005, WCED, 1978). To overcome complex real-world problems, such as hunger, poverty, and climate change, in September 2015 the international community launched the Global Development Agenda 2030. Agenda 2030 replaces the Millennium Development Goals (MDG) that expired at the end of 2015.

Agenda 2030 consists of 17 Sustainable Development Goals (SDGs) and 169 underlying targets to be achieved by 2030. The international community acknowledged that the challenges are global, impacting all countries, thus requiring joint action in, and by, all nations. Thus, Agenda 2030 is understood as a global agenda, with all countries expected to work together toward the achievement of goals. Furthermore, it is recognized that global challenges also need joint action by multiple actors, including international organizations, governments, the private sector, and civil society in order to find sustainable solutions (UN, 2015, UNEP 2015).¹

1.1.2 Food Security

In particular, the fulfilment of the second SDG (SDG 2), which seeks to “end hunger, achieve food security and improved nutrition, and promote sustainable agriculture,” (UN-DESA, n.d.) requires collaborative approaches. Food security is one of the greatest global challenges. Food security “exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 2009: 1, 1996). Globally, nearly 800 million people suffer from hunger, with more than two billion suffering from micronutrient deficiencies or forms of over-nourishment. The majority of undernourished people

¹ For a list of SDG actors, thus indicating the complexity of networks and institutions involved, see: <http://sdg.iisd.org/actors/>

live in developing regions, with the highest prevalence in Africa. Over 23% of the population in Sub-Saharan Africa is undernourished, amounting to approximately 220 million people (FAO, 2015, 2013).

Food security is one of the most complex global challenges, as it is cross-cutting, closely interrelated with other grand challenges (Wheeler and Von Braun, 2013, Beddington et al., 2012, Ziervogel and Ericksen, 2010, Godfray et al., 2010). The extent that food insecurity and malnutrition are effectively reduced and sustainable agriculture is promoted also affects accomplishing other goals, including the eradication of poverty (SDG 1), responding to climate change (SDG 13), and the sustainable use of marine and terrestrial ecosystems (SDG 14 and 15). Further, achieving good health and well-being (SDG 3) requires access to food and a balanced diet (FAO, 2017).

At the same time, progress toward food security (SDG 2) depends on progress toward several of the other goals. For example, awareness of balanced diets and food consumption depends on education (SDG 4), which also contributes to more sustainable consumption patterns and life-styles. Additionally, food security is influenced by gender equality (SDG5), which addresses issues of ownership and access to land or other natural resources (FAO, 2017, Godfray et al., 2010). Thus, the search for sustainable solutions to such cross-cutting and interrelated problems necessitates the involvement not just of actors from different disciplines, institutes, and countries but also stakeholder groups. Consequently, food security projects are an ideal setting for transdisciplinary research approaches.

1.1.3 Transdisciplinary Research Approaches

In science, the growing efforts to develop joint and sustainable improvements to global challenges, such as food security, have been followed by a shift in the epistemology of the adopted scientific research practices. Disciplinary and reductionist approaches are being replaced by integrative research approaches, such as inter- and transdisciplinarity (Lang et al., 2012, Hadorn et al., 2006, Funtowicz and Ravetz, 2003, Janssen and Goldsworthy, 1996). Interdisciplinary approaches bring together scientists from “different disciplines in order to overcome a blockage in research or to move into new productive areas of research” (Hadorn et al. 2006: 124). In order to transcend and integrate the perspectives of specific disciplines, such research is often also structured from a transdisciplinary perspective, with shared methodological frameworks, and often in collaboration with stakeholders. This shift is motivated by the notion that solutions to complex real-world problems can only be found if projects are established as interdisciplinary and involve societal stakeholders. Thereby, such transdisciplinary research approaches aim at overcoming disciplinary boundaries by taking into account the diversity of scientific and societal views of the problem and their respective methods of finding solutions (Pohl, 2008, Klein, 2008, Pohl and Hirsch Hadorn, 2008).

The increased need for joint action is also mirrored in the funding policies of national and international public funding bodies, including the European Union, the French Innovation Clusters, and the German Ministry for Education and Research (BMBF), all of which having launched strategic research initiatives that require the formation of research collaborations (vom Brocke and Lippe, 2015, Adler et al., 2009, Pohl, 2008, Defila et al., 2008). For example, in the case of the GlobeE (Securing the Global Food Supply) Initiative, financed by BMBF within the Framework of National Research Strategy BioEconomy 2030, the funding body required a transdisciplinary research approach as a precondition for funding, resulting in six research projects, including the case study for this dissertation. In the GlobE call, the Ministry explicitly notes that because past research has had limited effectiveness due to a lack of stakeholder involvement, transdisciplinarity was a prerequisite for funding:

In the past, funding programmes tended to focus too strongly on specific disciplines or research approaches, without sufficient local involvement. This significantly lowered the effectiveness of research activities (BMBF, n.d. a).

Within this notion, transdisciplinary research projects are increasingly established to research specific issues, as outlined in the request for proposals, which are then funded by governmental organizations. Consequently, “the lone scientist is becoming increasingly a minority” (Fiore, 2008: 258), and the scientific community must better understand how to bring together heterogeneous researchers, including non-academics, with different national, disciplinary, and institutional backgrounds. This dissertation aims to narrow this gap.

1.1.4 Transdisciplinary Research Projects

Transdisciplinary research projects are one organizational form of research collaboration and collaborative action working toward sustainable development. Different forms of collaboration exist, including thematic research networks or programmes as well as individual collaborative projects. One example of a collaborative research network in international agricultural research is the CGIAR Research Program on Agriculture for Nutrition and Health (www.cgiar.org), which includes 15 research centers, including Bioversity International, the International Center for Tropical Agriculture (CIAT), the International Food Policy Research Institute (IFPRI), and the World Agroforestry Centre (ICRAF). All CGIAR Research Centers are independent, non-profit research organizations. Pulling together a range of experts from a multitude of partners and other centers, CGIAR Research Programs focus on integrated research programs.

Collaborative research projects, in general, are “a temporary organisation that exist for the purpose of building and evaluating novel results under a pre-defined research objective and with constraints on resources, costs, and time. The work is carried out in a collaborative setting characterised by heterogeneous partners, a specific application context, collective responsibilities, and, in many cases, support through public-funding

agencies” (vom Brocke and Lippe, 2015: 1024). Some funding agencies expect the collaborations to have partners coming from at least three different countries and types of institutes to obtain funding (BMBF, n.d. b).

Although transdisciplinary research projects are a specific form of research collaboration, the singular term belies a wide range of complexity (Schmid et al., 2016, Zscheischler and Rogga, 2015, Pohl, 2008, Stokols et al., 2008b). There are differences in the conceptual understanding of transdisciplinarity: In the North American debate, transdisciplinary research is understood as, “a process in which members of different fields work together ... to develop novel conceptual and methodological frameworks” (Klein, 2008: S117), or even producing transcendent theoretical approaches. However, researchers very much remain in their disciplines. “Trans” mainly refers to cross-disciplinary collaboration, while knowledge production remains in the scientific community (mode-1). The extent to which the new scientific knowledge fits the needs of society depends heavily on the scientific problem analysis. In Europe, transdisciplinarity puts strong focus on transcending and integrating the perspectives of different disciplines, with a stronger emphasis on shared methodological frameworks, alongside collaboration with stakeholders from other societal sectors to co-produce knowledge and facilitate knowledge transfer from science to society (mode-2). The assumption is that, together with representatives of the real-world, research results will better fit societal needs. Following this understanding, transdisciplinary research projects not only intend to produce new knowledge, but also to transform it into action (Pohl, 2008, Nowotny et al., 2001, Gibbons et al., 1994). This understanding of transdisciplinarity also underlies the food security research project that serves as case study for this dissertation.

Apart from the conceptual understanding of transdisciplinarity, such research projects differ in complexity depending on organizational framework conditions that can be categorized as: duration (D), budget (B), and organizational composition (OC) (figure 1). While three years is a common funding period, it varies between a few months to many years. At the same time, budgets vary between very little and many million euros (Bammer, 2008, BMBF, n.d. c). The organizational composition and, thus, the degree of complexity, is defined here as the average of factors like the (1) number and types of (sub-) disciplines, (2) institutions, (3) non-scientific actor involvement, and (4) the level of stakeholder involvement. Stakeholder involvement ranges from information, consultation, cooperation, collaboration to empowerment (decision-making power) (Stauffacher et al., 2008, Arnstein, 1969). Further, (5) an international dimension can impact project work. If consortia transcend national boundaries with partners in different countries collaborating, complexity increases as site conditions, including the political environment and institutional structures as well as infrastructure can differ. Further, cultural differences are reflected in a variety of social, cultural, and moral expectations and norms that impact project work (du Plessis, 2012, Ely and Thomas, 2001, Church, 1995). In addition, (6) project design can further impact the organizational set-up, with the number of work packages and task groups, interdependencies of tasks, and established hierarchy levels affecting the project (Defila et al., 2008, Stokols et al., 2008b).

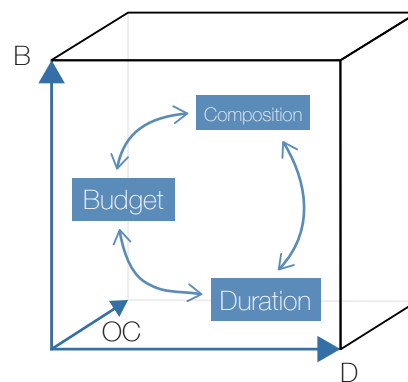


Figure 1: Space of Transdisciplinary Research Projects, own design (B: Budget, D: Duration, OC: Organizational Composition).

Figure 1 illustrates relations between the different variables and visualizes the space where various types of project structures can be positioned depending on their level of complexity. The variables are interrelated, each impacting the others. Budget and duration are assumed to impact the degree of organizational complexity, as, for example, a small budget provides limited feasibility to integrate a large number of (different) actors. A short duration also impacts organizational composition as bringing multiple actors into working processes as well as some methodological approaches require more time. Although organizational composition can affect duration and impact, with funding agencies approving proposals based on project design, partner composition, and innovativeness, the direction of influence is most likely stronger from the funding agency to complexity than vice versa; thus the duration and budget is more likely to be predefined by the funding bodies. Projects are increasingly being established in response to calls for proposals, resulting in funding requirements directly impacting project consortia membership (Protoogerou et al., 2010, Adler et al., 2009). This assumption of influence is supported by a study of interrelations between different conflict drivers in a transdisciplinary research project that finds that project design and implementation is heavily influenced by the donor agency's terms and conditions for funding (Löhr et al., 2018, Paper 1 (chapter 3.1)).

1.2 Challenges and Conflict in Transdisciplinary Research Projects

1.2.1 Conceptual Challenges

A coherent theory or methodology of integrating the diversity of project members within the transdisciplinary research approach does not yet exist. Each project usually develops its own research design, including determining how the multiple project partners and members will collaborate with each other and with the stakeholders. Consequently, the initial uncertainty in balancing and integrating the multiple, often competing, interests of scientists with diverse disciplinary backgrounds, as well as non-academic project members and stakeholders, is inherently high (Zscheischler and Rogga, 2015, Zscheischler et al., 2014, Botey et al., 2014, Farrell et al., 2013, Lang et al., 2012, Bammer, 2008). Project members collaborate for the duration of the project and then part ways. Thus, although the collaborative experiences stay with the individual project members, the organizational

knowledge is not retained because the organization disbands. Consequently, subsequent projects tend to have the same point of departure, again organizing the process from scratch (Pohl and Hirsch Hadorn, 2008, Gibbons et al., 1994).

Linked to the conceptual understanding and context-specific nature of transdisciplinary research projects, much of the theoretical debate on transdisciplinarity focuses on questions about adequate quality criteria and impact measurement. The tools used to measure success within a single discipline are inappropriate for transdisciplinary work (Lang et al., 2012, Mansilla et al., 2006). Conceptual deficits on success dimensions and evaluation criteria for transdisciplinary work are not just identified, but are subject to on-going debates over their definitions (Schmid et al., 2016, Zscheischler and Rogga, 2015, Klein, 2008, Mansilla and Gardner, 2003).

Success can be measured from different perspectives. The selection of criteria and indicators still varies between projects. For example, success can be measured evaluating: (1) scientific output performance; (2) societal impacts; (3) process quality (integration); (4) collaboration (team processes); or (5) personal gains. An additional challenge is the measurement of long-term effects (Schmid et al., 2016, Lang et al., 2012, Klein, 2008). The lack of commonly shared criteria for measuring project success in transdisciplinary research also impacts the ability to measure effects of an organizational support tool, such as a conflict management system, as in this dissertation. This challenge is further elaborated upon in section 1.3.3.

1.2.2 Operational Challenges

While the international research community is well aware of the complexity of grand challenges, with established institutional structures to facilitate joint action, typically neither researchers nor funding agencies pay attention to the communication and collaboration challenges or to the management challenges facing transdisciplinary research projects (Calamel et al., 2012, Adler et al., 2009). A lack of research on transdisciplinary research projects and their management is clearly identified in the literature (vom Brocke and Lippe, 2015, König et al., 2013, Adler et al., 2009). Calamel et al. (2012: 6) even describe such projects “as a ‘black box’ that needs to be opened wide,” in order to facilitate effective project implementation.

More research is essential, as research collaborations are complex organizational settings that are prone to conflict, just like any other organization, if not more so. This is especially true for large-scale, transdisciplinary agglomerations consisting of multiple research institutes from different countries, with high stakeholder involvement (Zscheischler et al., 2014, Farrell et al., 2013, Börner et al., 2010, Stokols et al., 2008b). In addition to integrating different disciplines and cultural backgrounds, international and transdisciplinary research projects mainly rely on virtual communication and are time-limited. As the number of disciplines, cultures, and partner institutions involved in a project increase, the challenges in terms of communication and coordination also increases (Graef et al., 2017, Börner et al., 2010). Because partner organizations are made up of project members with a great variety of different social, ethical, legal norms, rules, and behavioral expectations, conflicts can arise. Further, a variety of social roles interact in research collaborations as project

members are of different ages, genders, ethnicity, races, and class (Popescu et al., 2014, du Plessis, 2012, Ely and Thomas, 2001, Hofstede, 1980). Understanding sciences as a relational process in which knowledge is built not just through interaction and negotiation among scientists and other stakeholders, but also through public engagement, interpersonal processes can influence the collaborative environment of research.

In this sense, it is important to keep in mind differences related to communication style (direct vs. indirect), attitudes toward cooperation, competition, and conflict; the nature and desire for preservation of relationships among disputants; authority, social rank, and status; high-context and low-context communications; as well as concepts and management of time (Brahm and Ouellet, 2003, Hofstede, 1980). If neglected, hidden expectations and diverging perceptions can result in conflict. Thus, the potential for conflict arising from complex organizations is high, making its management challenging (Zscheischler et al., 2014, Farrell et al., 2013, Adler et al., 2009, Stokols et al., 2008b).

In this dissertation, conflict is defined as “an interactive process manifested in incompatibility, disagreement, or dissonance within or between social entities” (Rahim, 2002: 207). This definition is chosen because it addresses conflict at different levels across organizations, groups, and individuals, describing it as a process in which entities can enter and leave at different stages (Gupta et al., 2011). The term “challenges” is also used in this dissertation because many of the case study’s Tanzanian members preferred speaking of challenges rather than conflicts because its connotation is less negative and broader than that of “conflict” (Löhr et al., 2017a, Paper 2 (chapter 3.2)).

As discussed and visualized in Löhr et al. (2016, Paper 2 (chapter 3.2, figure 1)), there are two types of conflicts in transdisciplinary research projects: internal and external. Internal conflicts are conflicts arising directly within the project consortium. External conflicts are conflicts with the potential to impact the project’s workflow that arise with or among actors outside the project consortium. Conflicts in transdisciplinary research settings can further be differentiated between challenges due to interdisciplinary integration and those due to the collaboration between scientists and non-scientists (Zscheischler et al., 2014, Pohl and Hirsch Hadorn, 2008).

In a transdisciplinary project, each academic project member has a specific home base in a discipline, field of research, or even methodological school within a discipline.² While these different knowledge bases have to be connected through a common research problem in the research project, communication is challenging. Often scientists from different disciplines have difficulties understanding the concepts and methodologies used in other disciplines. Further, what may at first appear to be common terminology, often turns out to have different underlying meanings for each group. Thus, there is high potential for misunderstandings, confusion, absence of integration, if not a loss of methodological coherence when common understanding is missing (Bammer, 2008, Defila et al., 2008, Pohl and Hirsch Hadorn, 2008, Lélé and Norgaard, 2005).

There may be differences in the status and power that disciplines enjoy within research projects, which may, in turn, depend on the subject under study. The disciplines with the closest proximity to the topical focus of the project usually also have the strongest impact

² This also applies to interdisciplinary projects in which non-scientific stakeholders are missing.

on the theoretical and empirical approaches of the projects. The cooperation of disciplines in such an environment often requires that data and other scientific outcomes be shared across disciplines. Access to such vital scientific resources is often distributed unequally, which leads to diverging positions of power within the project (Farrell et al., 2013).

Between scientists and non-scientific project members, power relations play a significant role: Diversity of perspectives on the research problem exists, which can lead to conflict if not taken into account carefully. The leadership role of science in research projects can cause conflict if it conflicts with stakeholder interests. The use of scientific language can impose an exclusionary effect on stakeholders. Additionally, the question of knowledge transfer from the world of science to the real-world and stakeholders is often a cause of conflict. A lack of resources to continually involve stakeholders in the project can cause conflict and further increase power differences (Zscheischler et al., 2014, Lang et al., 2012, Pohl and Hirsch Hadorn, 2008).

This dissertation's research focuses primarily on conflict between project members (internal) and only touches upon the stakeholder level. This focus is due to the mandate given by the management of the case study project to the conflict management system that is the key object of research of this dissertation. The system will be introduced in more depth in section 1.3, as well as subsequent papers (Löhr et al., 2017a, 2017c, Papers 3 and 4 (chapters 3.3 and 3.4)).

1.2.3 Effects of Conflict on Transdisciplinary Research Projects

Conflicts can have negative or positive effects on relationships and organizational functioning (Tjosvold, 2006, De Dreu and Beersma, 2005, Jehn and Bendersky, 2003). This dissertation applies a problem-centered view, stressing the negative effects of conflicts, in order to increase awareness for organizational challenges in transdisciplinary research projects and, even more importantly, to analyze the effects of a conflict management system in this particular work environment. In doing so, communication and collaboration is improved, thereby reducing the risk of conflict escalation and improving the performance of such projects.

The success of transdisciplinary research projects depends on team members communicating, collaborating, and coordinating. Relations and communication between the different parties involved matter for project success. Well-functioning relationships and communication between the project partners are essential for information sharing and knowledge creation; particularly in a project setting defined by a limited life-time, which makes on-time performance crucial in order to meet promised project goals (Tebes et al., 2014, Fiore, 2008, Klein, 2008, Pohl and Hirsch Hadorn, 2008). Further, in transdisciplinary research projects with high stakeholder involvement, communication requirements increase with the number of project partners, making efficient communication the backbone of such projects. In addition, the adoption of innovations is influenced by the type of information that is available, how it is shared and recurrently reflected between and among the stakeholders and the scientists of such projects (Graef et al., 2017, Ondersteijn et al., 2003). Hence, relationships and good communication play an important role for

creating a productive working atmosphere and achieving the project goals. However, in most cases, this is neither explicitly considered nor openly addressed (Schmid et al., 2016, Fiore, 2008).

Conflict can have destructive effects on research collaborations, including delays in delivery, poor data, staff absenteeism, staff replacement, and extensive conflict management processes, if not complete project failure. To provide one vivid example of how conflicts can negatively impact research projects, figure 2 shows the impact of conflicts on project work in order of importance, as stated by 70 Trans-SEC project members who experienced conflict situation(s) during project work. The data clearly indicates that conflict at work negatively impacts employee wellbeing by increasing stress levels. At the same time, it can harm project output by reducing the time available for task performance, thus also harming work quality. Only a small percentage stated that either they stayed away from work, withheld information, or were otherwise uncooperative due to conflict. However, it must be remembered that such behavior could have disciplinary consequences, thus impacting response behavior.

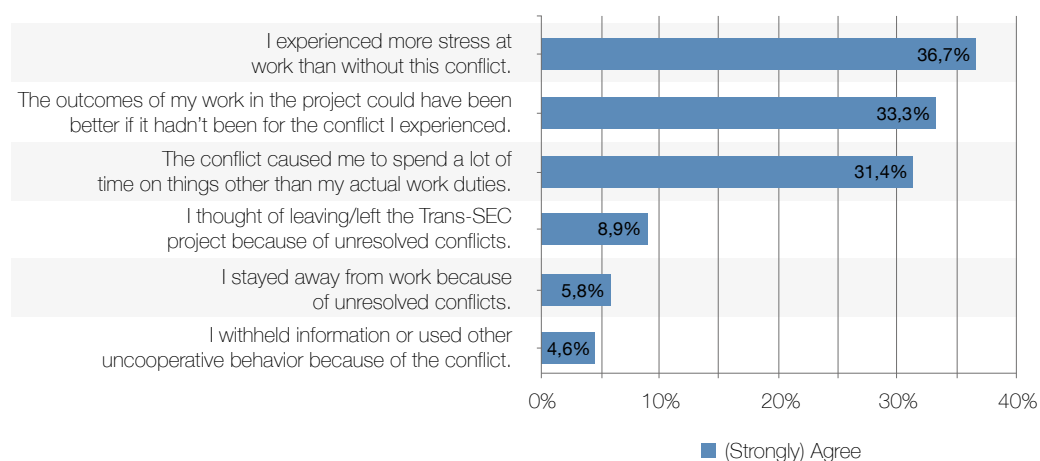


Figure 2: Negative Effects of Conflict on Transdisciplinary Research Collaboration (Source: Trans-SEC CPM online survey, own computations. Note: responses on a five point scale with categories 1 "Strongly disagree", 2 "Disagree", 3 "Neither agree nor disagree", 4 "Agree", and 5 "Strongly agree"; for the computation of percentages the variables were dichotomized by collapsing categories one, two and three as well four and five respectively.)

These findings are supported by a self-evaluation by project scientists of the management, collaboration, and communication during their transdisciplinary research activities. This study confirms that hampered communication and conflict results in both delays in delivery and in increased need of coordination. Furthermore, with increasing task complexity, it is not just more time, more cooperation and more communication among project members that is required, but also more instructions from project management. Overlooking these issues results in greater tensions and increased dissatisfaction (Graef et al., 2017). Empirical studies on the operational performance of transdisciplinary research projects are scarce. Typically, project members are perceived to be hesitant to critically assess their col-

laboration success; this is probably connected with the competitive research environment and a preference to focus on the field research (Fang and Casadevall, 2015, Bennett and Gadlin, 2012).

1.2.4 Identifying the Research Agenda

More research is needed on collaborative team work and the tools that facilitate good collaboration and project success. Spread across a variety of disciplines and application areas, the existing literature is fragmented, thus making the synthesis of results, and application in practice, challenging (vom Brocke and Lippe, 2015, König et al., 2013, Börner et al., 2010, Adler et al., 2009). The literature acknowledges the innate organizational complexity of collaborative research projects, along with the identification of the inherent high risk of project failure and the importance of team members cooperating and coordinating if success is to be achieved (Tebes et al., 2014, Fiore, 2008).

A knowledge gap on the operational level is identified, with applied management methods that are not well-suited to the specific needs of transdisciplinary research projects. Managers typically focus on individual projects, starting anew with project management principles and tools each time, often based on the “learning by doing” principle (vom Brocke and Lippe, 2015, König et al., 2013, Calamel et al., 2012, Bammer, 2008, Barnes et al., 2006).

The need for improved project management, along with increased investments in resources for meta-communication is promoted. The open clarification and discussion of differences is critical in order to reduce miscommunications and strengthen work environments (Farrell et al., 2013, König et al., 2013, Klein, 2008). Interpersonal communication is important, helping project members to understand individuals’ roles, the requirements, and the collective objectives. It also helps in the identification of disciplinary and departmental borders before developing new conceptual frameworks that facilitate the understanding and resolution of the problems under investigation.

Some studies find that while homogenous teams might tend to be more socially cohesive, there are some tasks, including creative and intellectual tasks, where heterogeneous teams have an advantage. The integration of project members from different backgrounds is central for transdisciplinary teams. However, when project members do not have the opportunity and space to reflect on their subjectivities with the team, conflicts can arise (Stokols et al., 2008b, Fiore, 2008, Klein, 2008).

Ideas proposed by members of other projects include, for example, developing a framework that facilitates transparency and communication among project partners as well as the integration of an external advisory group to help reflect on, and refocus on, internal processes (Zscheischler et al., 2014, König et al., 2013, Defila et al., 2008). Important initiatives are activities that encourage intercultural cooperation and communication, thus facilitating understanding. Cultural identities need to be shared, relieving tensions in a constructive atmosphere. It is from the sharing of information that the objectives can be better articulated, taking into account the limits of subjects and their research. In addition, members must remain open to new viewpoints even while adapting to changing conditions (Stokols et al., 2008b).

Increasingly projects, particularly in biomedical and public health sciences, integrate individual measures, such as training on group processes, communication, and conflict management, in order to facilitate collaboration; some also offer an on-demand mechanism, such as mediation, in case of conflict (König et al., 2013, Zucker, 2012, Bennett et al., 2010, Defila et al., 2008). It is within this notion that Trans-SEC project management decided to integrate a conflict management component into its project design (Graef et al., 2014).

The communication tools vary, but throughout the case studies these rarely appear to be embedded into a strategic approach to enhance communication (Zscheischler and Rogga, 2015). This dissertation aims to narrow this gap by analyzing the integration of a conflict prevention and management (CPM) system as an organizational support tool for project members and managers to facilitate the functioning of a transdisciplinary research project.

1.3 Conflict Management Systems

1.3.1 Conflict Management Systems

Conflict management programs are proven successful in a variety of organizational settings, including companies, hospitals, schools, and institutes of learning since the 1980s (Yarn, 2014, Kirchhoff and Klowait, 2014, Hochmuth, 2014, Szmania et al., 2008, Jameson and Johnson, 2005, Barsky, 2002). Such programs range from integrating single measures, such as mediation on demand or an institutional ombudsperson, to implementing conflict management systems, which are “a coordinated set of processes or mechanisms that interact with each other to prevent, manage, and/or resolve disputes” (Costantino, 2009: 82). This dissertation focuses on a system approach. The focus is possible because the Trans-SEC management team integrated a complete conflict management system into the project's design at the outset (Sieber and Graef, 2013). While this could suggest that conflict management systems achieve better effects than the individual integration of components or measures, further research to test and verify such superiority is required (Roche and Teague, 2012, Bendersky, 2007). This, however, falls outside the scope of this dissertation.

The introduction of conflict management programs is normative by assuming that its application will positively impact work processes. Initially, the introduction of so-called alternative dispute resolution mechanisms focused on labor-management conflicts, usually related to violations of policy, contract or law (Godard, 2014, Mahony, 2014, Roche and Teague, 2014) and aimed at reducing litigation processes and conflict cost related to absence, fluctuation of employees, decreased productivity from low motivation, cost of litigation processes, or even workers' strikes (Currie et al., 2016, Roche and Teague, 2014, Lynch, 2001). Since the 1990s, conflicts in groups and team-based work settings are also identified as contributing to poor organizational functioning. Consequently, focus shifted from estimating efficiency only in terms of savings toward a more value-based approach related to improvement of work quality and employee satisfaction, which are also found to positively impact productivity. Values closely related to this newer approach are elements such as democracy, participation, representation, and equity (Roche and Teague, 2014,

Mahony and Klaas, 2014, PwC and Viadrina, 2013, De Dreu and Beersma, 2005). This puts conflict between employees and groups of employees in the focus of organizational conflict management, resulting in conflict management measures shifting toward preventive measures, including communication and conflict management training (Roche and Teague, 2014, Bendersky, 2003, Jehn and Bendersky, 2003).

This shift is paralleled by changing perceptions of conflict. While, for a long time, the general perception was that conflict was, per se, destructive and had to be eliminated in order to ensure successful work processes and output, it is now thought that conflict is inherent in all work contexts and that it can also have productive consequences (Tjosvold, 2006, Jehn and Bendersky, 2003, Jehn and Mannix, 2001). Thus, there is increasing focus on the prevention and management of conflict in organizations in order to reduce the risk of harmful conflict and to assist with managing it when it occurs.

There are different models, such as the Viadrina Component Model, to help design and implement conflict management systems within organizations. They claim to be generic, thus applicable across all types of organizations and countries (PwC and Viadrina, 2013, 2011, SPIDR, 2001, Slaikeu and Hasson, 1998, Costantino and Merchant, 1996). These models are described, along with their differences and similarities, in several publications (Roche and Teague, 2014, Lynch, 2001, Conbere, 2001). Still, in transdisciplinary research projects, such systemic support tools are not yet prominent. This dissertation explores the design needs as well as the potential of such a system as an organizational support tool to foster collaboration and project effectiveness in a transdisciplinary research setting.

The Viadrina model is chosen as conceptual frame for the design of the CPM system in the case study project because it is the result of a 10-year study of German companies on knowledge and innovation practices in the area of conflict management. It is used as a point of reference for a considerable number of conflict management programs across different types of organizations and with positive results (Kirchhoff and Klowait, 2014, PwC and Viadrina, 2016, 2013, 2011).

As current leading models mainly originate from experience and practice in North American and Western European countries, Western values dominate the design and implementation principles. Techniques, such as mediation, activities, and services usually originate from Western thinking. Therefore, as part of this dissertation's research, it is particularly interesting to analyze to what extent a conflict management system can be transferred to a highly decentralized organizational setting that is international, with culturally diverse project members.

1.3.2 Norms and Conflict Management Systems

Underlying norms and behavioral expectations are crucial to consider in today's globalized world. Globalization is a paradox: although it brings people together, the price is that failing to consider the underlying norms and behavioral expectations behind individuals can result in conflict. Thus, the study of norms is central when approaching the implementation of a conflict management system in a transdisciplinary research project that is focused on sustainable development; a setting in which international cooperation is a precondition.

Different legal, social, or ethical norms, as well as the rules and behavioral expectations of actors, influence the perceptions and conflict behavior of individuals (Kirchhoff and Kraus, 2016a, 2016b, Bercovitch and Foulkes, 2012, Menkel-Meadow, 2009, Kirchhoff, 2008). In this case, the differences are driven by the project members and their intermediaries, as well as societal and organizational conflict management practice. The spread of conflict management programs and systems is very much influenced by the institutional and social environment in which dispute systems operate. The increasing popularity of conflict management programs in North America, Western Europe, and Australia is accompanied by a shift toward increasing acceptance and promotion of alternative dispute resolution by legal norms. Changes in labor laws and regulations that impact rules and regulations about alternative dispute resolution are promoted by national and supranational institutions, including the United Nations (UN), the European Union (EU), and many national governments. For example, the commitment by the EU to promote consensual conflict resolution processes and the passing of national mediation laws to promote the use of mediation and other alternative dispute resolution approaches, as was the case in Germany in 2012 (PwC and Viadrina, 2016, Duursma, 2014), led to the increasing acceptance and spread of alternative dispute resolution. Laws and regulations also impact conflict management practice as they facilitate the orientation and judicial frames for users, for example by regulating questions on confidentiality and its legal status.

For transdisciplinary research projects, the rules and regulations of the funding agencies, such as employment policies, money flow regulations, and budget allocation for conflict management activities, also impact its organizational functioning and its conflict management processes. Organizational rules and regulations of the project's lead organization and the respective collaboration partners, including labor rules and regulations as well as conflict management standards, influence not just the expectations of project members, but also conflict management practice and system design. For example, conflict can emerge when daily allowances for conference attendance is not supported by the funding rules of German ministries but is a common practice in a partner country (Löhr et al., 2017a, Paper 2 (chapter 3.2)).

In addition to institutional frames impacting conflict management practice, research collaborations unite diverse actors, each bringing their own social, cultural, and moral expectations and norms, thus impacting conflicts and their management, as already discussed in section 1.2.2. as well as in Löhr et al. (2017a, 2016, Papers 1 and 2 (chapters 3.1 and 3.2)). Every façade, whether a conflict party or a third party addressing conflict, typically turns out to be sensitive and crucial (Bercovitch and Foulkes, 2012, du Plessis, 2012, Menkel-Meadow, 2009). The composition of project members as well as of the conflict prevention and management staff are crucial elements worth careful consideration when designing and implementing a conflict management system. This includes agency and representation when determining the conflict prevention and management structure as well as the selection of conflict contact points and conflict processors (SPIDR, 2001, Rowe, 1997). This dissertation's research reveals, for example, that in Tanzania seniors are preferred as conflict contact points because they inherently have more wisdom and respect

than juniors. In Germany, young scientists are predominantly appointed, possibly due to seniors lacking capacity or motivation and different perceptions of hierarchies (Löhr et al., 2017a, Paper 3 (chapter 3.3)).

Assuming that international work settings inherently have a range of norms, rules, and behavioral expectations, needing to provide space for diverging perspectives, a high degree of participation by projects members from the various countries, institutes and disciplines was sought during the design process of the CPM system in the case study. Further, a high degree of flexibility was strived for in order to allow for integrating multiple frames and perspectives into the system design. The impact of diverging norms, expectations, and behavior is revealed in this dissertation's research, as hinted by the two proceeding examples of daily allowances and conflict contact point selection. Further examples are discussed in papers one and two of this dissertation. Still, this dissertation emphasizes organizational and system design structures.

1.3.3 Evaluation of Conflict Management Systems

Although conflict management systems are gaining in importance in different types of organizations, publications are mainly descriptive. Overall empirical research on the features and effects of conflict management systems is scarce (Roche and Teague, 2012, Lipsky and Avgar, 2008, Lipsky and Avgar, 2004, Conbere, 2001). Existing studies cover a diversity of conflict management systems aspects, with research thematically scattered and comparison of findings difficult. The most influential studies include Lipsky et al (2015) on the prevalence of conflict management systems in Fortune 1000 firms in the USA; Bendersky (2007, 2003) on her complementarities model analyzing how different conflict management practices interact and impact employee attitudes and behaviors; and Roche and Teague (2012) examining the effects of conflict management systems on organizational outcomes in Ireland quantitatively.

One reason for the limited empirical research is that practitioners, from a variety of professional backgrounds, such as lawyers, mediators, human resource developers, and economists, are usually responsible for conflict management design. Cooperation between practitioners and researchers is often missing and a stronger partnership is needed (Conbere, 2001). However, there are two leading examples of cooperation: 1) The REDRESS transformative mediation program, resulting from a twelve year research collaboration between the United States Postal Service and the Indiana University School of Public and Environmental Affairs (Amsler, 2014); and 2) the "Round Table Mediation and Conflict Management of the German Economy" that brought together more than 50 German corporations and the Institute of Conflict Management at the European University Frankfurt (Oder, Germany) for a ten year period (PwC and Viadrina, 2016).

The effects of conflict management systems are often distinguished with regards to employers and employees, although these levels are interrelated. For employers, the benefit comes from a reduction of conflict costs related to absence, fluctuation of employees, decreased productivity due to low motivation, cost of litigation processes, and, in some cases, workers' strikes (Currie et al., 2016, Roche and Teague, 2014, Lynch, 2001). Employee outcomes include increased levels of personal competence to manage conflict,

less conflict avoidance behavior, greater work satisfaction, and increased organizational commitment (Roche and Teague, 2014, Bendersky, 2007, Lynch, 2001, Conbere, 2001). Organizational members can benefit from or perceive conflict management systems differently, based on their relative status. Further, effects related to other stakeholder groups are possible and should be researched (Rogers et al., 2013). This underlies the reason why this dissertation differentiates perception by hierarchical position.

One common debate in the evaluation and impact assessment of conflict management systems is over which indicators should be used. There is a tendency to measure effectiveness in monetary terms, focusing only on cost savings and using indicators on decreased litigation, reduced sick rates, and fluctuation of employees, as well as productivity levels. There are formulas and online cost calculators to estimate conflict cost (KPMG, 2009, Dana, 1999, Ahrens, n.d.). Focus has shifted from estimating effectiveness in terms of savings to a value-based approach that accounts for work quality, behavioral changes, and employee satisfaction (PwC and Viadrina, 2016, 2013, Rogers et al., 2013, De Dreu and Beersma, 2005). This dissertation follows the employee satisfaction approach.

Evaluating the effects of organizational changes requires the comparison of results to a baseline study or a set of indicators available for the time before the conflict management system was introduced. Measuring effects in transdisciplinary research projects bears the challenge that such projects, like the case study used in this dissertation, are temporary organizations that are newly established with no prior work history, no records regarding staff changes, publications, or expenses for conflict management available. In addition, the lack of generic success measures for transdisciplinary research, as presented under 1.2.1, impacts the measurement of effects of the conflict management system on project success. If agreement on success criteria and indicators existed, the effects of conflict prevention and management measures could be measured against them. Furthermore, some (long-term) outcomes can only be measured at later stage (Lang et al., 2012, Stokols et al., 2008a, Klein, 2008). Another issue is that obtaining data on group processes and project performance in scientific research projects is challenging as scientists are often highly skeptical of internal evaluation, probably due to the highly competitive nature of scientific research (Fang and Casadevall, 2015, Bennett and Gadlin, 2012). Thus, this dissertation is exploratory, with the results indicating that more research is required in order to test and verify its findings.

1.4 Research Objective and Structure

1.4.1 Research Objective

As the number of transdisciplinary research projects increases, with the success of each one inherently threatened by the complex organizational structure built to support it, it is important to better understand the drivers of conflict and possible project failure as well as how to bring together diversity, in terms of disciplines, in terms of methodologies, in terms of culture, and in terms of perspectives. This increases the probability that transdisciplinary research achieves its ambitious goals. The overarching research objective of this dissertation project aims to facilitate the operational functioning of transdisciplinary

research projects by analyzing the design and effects of a conflict management system in such a research environment to foster internal communication and collaboration, thereby preventing conflict escalation and contributing to the project's ultimate success.

The three guiding research questions (RQ) are:

RQ1: *What are the drivers in a transdisciplinary research project that make such organizational setting prone to conflict and possible project failure? (Paper 1 and 2)*

RQ2: *Is it possible to transfer a conflict management model developed for a business context to a transdisciplinary research environment? (Paper 3)*

RQ3: *What effect does a conflict management system have on communication and collaboration in a transdisciplinary research project? (Paper 4)*

Underlying this dissertation's research are three hypotheses (H):

H1: *Organizational complexity makes transdisciplinary research projects prone to conflict and possible project failure.*

H2: *Models of conflict management systems that are mainly derived from domestic business settings can be transferred to an international and transdisciplinary research setting.*

H3: *Conflict management systems have positive effects on communication and collaboration, thus increasing project effectiveness.*

1.4.2 Research Design

In this dissertation, the research consists of four peer-reviewed papers that combined are the core of this cumulative dissertation. The papers present the accompanying research that occurred parallel to the implementation of the conflict prevention and management (CPM) system in the Trans-SEC project. Aligning with the three hypotheses, the research is divided into three parts. The first part, (paper one and paper two) analyzes drivers that make transdisciplinary research projects prone to conflicts and possible project failure, establishing interrelations between the drivers. Applying a multi-dimensional conflict analysis for food security projects increases the awareness of the complexity of conflict situations and helps the research community, particularly project managers, deal with the unpredictability of outcomes created by system dynamics. Paper two links organizational characteristics of transdisciplinary research projects to conflict management systems. It analyzes the implications of the project's organizational structure on the design of the conflict management system. Consequently, it provides the basis for the design of a conflict management system for transdisciplinary research projects. Paper three tests the transfer of the Viadrina component model of conflict management from a domestic and mainly business environment to an international and transdisciplinary research setting, using a food security research project as case study. The research finds that conceptual modifications of the Viadrina model are required to make the system fit this type of research environment. A component of conflict prevention is added to the model and conflict management structures decentralized. Paper four evaluates the effects of the conflict prevention and management system in the Trans-SEC project in order to draw conclusions for the use of such system in future projects. Results of each paper directly influenced the

subsequent research steps. Based on the results of this sequential research, this dissertation provides answers to the underlying research questions and draws conclusions on the effects of conflict management systems in transdisciplinary research projects.

1.4.3 Research Methodology

To explore the research questions, both qualitative and quantitative data collection methods situated in social sciences were applied between 2013 and 2016. This allowed for the triangulation of results (Jick, 1979).

Paper	Individual Interviews	Focus Group	World Café	E-Mail Survey	Online Survey
1	○	○	○		+
2	+	+	+		
3	+	+	+	+	
4	○	○			+

+: applied ○: indirect

Table 1: Overview of Research Methods.

Qualitative methods, namely individual semi-structured interviews (Rowley, 2012, Qu and Dumay, 2011), focus groups (Grudens-Schuck et al., 2004, Kitzinger, 1994) as well as the “World Café” large-group participatory discussion forum (Aldred, 2011, Fouché and Light, 2011, Brown, 2008), were applied to analyze the project’s organizational set-up including inherent challenges and to gather input from project members on conflict management system structures. By means of quantitative methods, e-mail survey, and online web survey (Couper, 2008, Tourangeau et al., 2013), interrelations of conflict drivers that endanger project success were established and the effects of the conflict management system evaluated. Differentiated by paper, table 1 shows the different methods that were applied. As this dissertation’s research process was iterative, results of one paper fed into the next. Therefore, methods applied in previous research papers had an indirect impact on the next paper’s research (as indicated by the symbol ○ in the table). An in-depth description of each method and implications of previous research results is provided in the papers that follow.

1.4.4 Trans-SEC as Case Study

For this dissertation’s research, the international and transdisciplinary Trans-SEC project (www.trans-sec.org) on food security, serves as the case study. A food security research project was chosen because such projects exemplify the increasing complexity of research projects. Studying complete food systems requires large projects that integrate not just a multitude of disciplines and related topics, but also institutions, teams, and individuals across countries (Graef et al., 2017, Schmid et al., 2016). Trans-SEC aims to improve the

food situation for the most vulnerable, rural population of four villages in Tanzania, targeting a variety of key local and regional stakeholders. The project consortium is composed of more than 120 scientists and non-scientists, with consortium members belonging to 14 different institutions, the majority of them based in Germany and Tanzania (Graef et al., 2014). Figure 3 maps the multiple actors of the Trans-SEC project, showing its complex set-up across countries and institutions. The Trans-SEC management team also integrated a conflict management system in the project design after previous collaborations suffered from misunderstandings between team members for a variety of reasons. Thereby, the Trans-SEC project provides access to valuable data on conflict and its management in a transdisciplinary research setting, making it an ideal case study for this dissertation (Löhr et al., 2017a, Graef et al., 2014).

Trans-SEC is part of the GlobeE (Securing the Global Food Supply) Initiative and is financed by the German Ministry of Education and Research (BMBF) within the Framework of National Research Strategy BioEconomy 2030. It is funded for a period of six years (2013–2018), with a total budget of € 7.5 million provided by the BMBF and co-funded by the German Ministry of Economic Development and Cooperation (BMZ). A detailed description of the case study project and analysis of its organizational structure is provided in each research paper included in this dissertation.

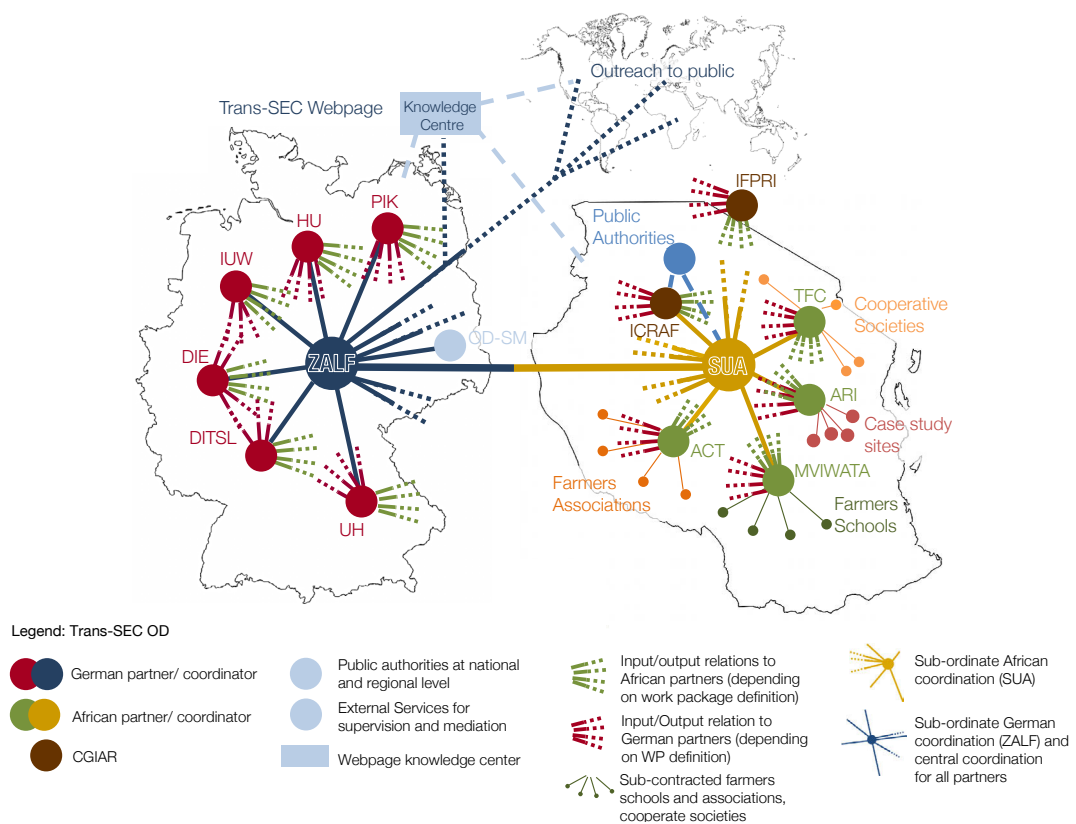


Figure 3: Mapping of the Trans-SEC Organization (Trans-SEC website; www.trans-sec.org).

2

Theoretical Framework

2.1 Conflict Management Research

Generally speaking, conflict studies is a broad field inviting research on multiple aspects and from multiple perspectives. This dissertation is situated in the “management and organizational studies” strand, one of four associated with conflict studies. The further research strands are: international relations and peace; alternative dispute resolution; as well as public dispute and environmental conflict resolution. These strands are not pure, with plenty of interactions and overlap occurring (Li et al., 2012). The situation of this dissertation’s research topic in “management and organizational studies” in the context of food security research is reflected by the journals that published this dissertation’s papers: Paper one is situated in “knowledge management,” Paper three in “human resources, learnings and organizational studies,” Paper four in “organizational behavior and development.” Paper two was published in the field of “food security,” thereby establishing the link between organizational conflict management and food security research.

The study of organizational conflict management invites research from multiple disciplines and sub-disciplines (fields), although most publications come from the social sciences. Between 1997 and 2006, most conflict management articles were published in journals on general management and psychology, alongside journals on conflict management and negotiation (Li et al., 2012, Ma et al., 2008).

Scientists from fields like behavioral sciences, psychology, and sociology put the research emphasis on social conflict between employees and groups of employees and its effects on work performance (PwC and Viadrina, 2013, Rogers et al., 2013, Ma et al., 2008). The research focus is more on the micro level, investigating individual conflict management behavior in relation to other individuals or to groups. For example, conflict types, individual conflict styles, behavioral changes linked to personal competence to manage conflict, as well as greater work satisfaction and organizational commitment are investigated (De Dreu and Beersma, 2005, Jehn and Mannix, 2001, Jehn, 1997). This dissertation is heavily indebted to the knowledge gained by, and methodologies developed for, these research fields. However, this work’s research focus is on conflict management systems as an organizational intervention to improve communication and conflict behavior (Lalonde, 2011, Lynch, 2003, Costantino and Merchant, 1996). Thus, the focus is on the project as an organization, the total system, and the project consortium across groups. It also

touches upon personal gains, but more as proxy indicators to measure overall system effects. Therefore, this dissertation approaches the research from the field of organizational studies and, in particular, organizational development.

2.2 Organizational Development and Conflict Management Research

Organizational development (OD) is defined as, “a system-wide application and transfer of behavioral science knowledge to the planned development improvement, and reinforcement of the strategies, structures, and processes that lead to organization effectiveness,” (Cummings and Worley, 2009: 1). There is a strong theoretical and conceptual overlap, with the implementation of conflict management systems acting as a planned measure to improve communication and collaboration behavior, thus contributing to project success (figure 4) (Costantino and Merchant, 1996).



Figure 4: Conceptual Overlap of Organizational Development and Conflict Management Systems, own design.

OD is described as applied science focusing on understanding and managing organizational change as well as a field of scientific study and inquiry (Cummings and Worley, 2009). It is mainly embedded in social sciences, as it draws on a broad range of related fields, including psychology, sociology, behavioral sciences, cultural anthropology, and political science (Burnes and Cooke, 2012, Garrow, 2009). For organizational diagnosis

and intervention, qualitative evaluation methods, such as individual interviews, focus groups, and collective methods, are the most common and are supported by quantitative methods, such as surveys (Cummings and Worley, 2009, Cassell and Symon, 2004). This methodological approach, which is strongly situated in social science practice, aligns with methods applied for conflict management design and evaluation and, thus, also this dissertation's research methodology (see 1.4.3.).

OD's leading question is how people, systems, and technology can be humanely and effectively organized, with a focus on relationships, teams and intergroup dynamics (Garrow, 2009). In this way, OD is considered to be a post-war response to the dehumanizing effects of scientific management practices that treated labor as a commodity that could be easily dismissed if there was any organizational dissent or industrial conflict (Burnes and Cooke, 2012, Lalonde, 2011, Garrow, 2009). The OD approach emphasizes both micro-concepts, such as leadership, group dynamics, and work design, and macro-approaches, including strategy, organization design, and international relations (with a focus on personal and social characteristics of a system) (Cummings and Worley, 2009).

Different models for structuring OD processes exist (Cummings and Worley, 2009, Burnes, 2004). All have in common the three steps of (1) diagnosing (organizational analysis), (2) intervention planning and implementation, and (3) intervention adoption. Some models additionally include evaluation as a fourth integral part of OD processes (Asumeng and Osae-Larbi, 2015). However, all models understand the process as iterative, with the different phases overlapping each other (Asumeng and Osae-Larbi, 2015, Burnes, 2004). For the case of a conflict management system in a project setting that is time-limited, the evaluation phase, which includes the documentation of learnings, is particularly important to extend impact beyond the research project's life-time. This understanding aligns with the perspective of Asumeng and Osae-Larbi (2015) who advocate the integration of an element of 'empowerment and withdrawal' in OD processes. This additional step is meant to ensure that knowledge and processes continue beyond the presence of OD consultants.

2.2.1 Norms and Principles of Organizational Development

The introduction of OD interventions, equal to the introduction of a CPM system, is normative in nature. Organizational change is intended in a particular direction, seeking to improve problem solving, quality of work life, as well as effectiveness (Cummings and Worley, 2009). The set of norms and principles underlying OD – such as human dignity, justice, and responsibility – are very much in line with those of this dissertation's research on CPM (Gasser, 2015, Burnes and Cooke, 2012, Cummings and Worley, 2009, Garrow, 2009). These humanistic values underlying the conceptual approaches of CPM, as well as OD, prevail in Western countries. Due to the origin of OD, like CPM systems, in Western countries, adaptations are crucial when it is introduced in international settings (Cummings and Worley, 2009) like, for example, in the case of the Trans-SEC food security research project.

The principles of (1) open system, (2) participation, and (3) evaluation that underlie OD (Lalonde, 2011, Cummings and Worley, 2009, Garrow 2009) also apply to CPM design (Costantino and Merchant, 1996). (1) The theory of open systems underpins system-wide applications of OD. Open systems theory recognizes organizations as living systems that exist in the context of a larger environment; constantly interacting. This perspective also applies to international and transdisciplinary food security research projects that are constantly interacting with external parties, including the stakeholders. (2) The participation of employees across organizational levels in intervention design is a key principle of OD. With increasing scope and levels of participation, change processes are thought to have greater potential to be durable and successful (Gasser, 2015, Garrow, 2009, Cummings and Worley, 2009, Stauffacher et al., 2008). Participation is also a key principle of CPM system design (SPIDR, 2001, Slaikeu and Hasson, 1998, Rowe, 1997, Costantino and Merchant, 1996), although in practice challenges can emerge, as found in the case of Trans-SEC (Löhr et al., 2017a, 2017b, Papers 2 and 3 (chapters 3.2 and 3.3)). (3) Closely linked to participation, evaluation of interventions and processes is also integral part of OD. Openness to process adaptation ensures that OD programs address the needs and interests of the organization and its members and is based on continuous improvement and not a one-time needs assessment (Cummings and Worley, 2009); a principal that is also key for CPM implementation, impacting this dissertation's research (SPIDR, 2001, Slaikeu and Hasson, 1998, Rowe, 1997, Costantino and Merchant, 1996).

2.2.2 Interventions

Within the framework of organizational development, organizational analysis is done in order to identify the measures best suited to facilitate change. There are four principle types of OD interventions: (1) Human process interventions; (2) Human resources interventions; (3) Strategic interventions; and (4) Techno-structural interventions (Lalonde, 2011, Cummings and Worley, 2009). The introduction of a CPM system in a research project is considered an OD intervention in this dissertation, as the objectives of OD and CPM introduction are quite similar. Further, the first two categories of OD interventions show a high overlap with measures and activities that are part of CPM systems (Lalonde, 2011, Lynch, 2003, Costantino and Merchant, 1996).

(1) Human process interventions concentrate on individual behavior in organizations and on the means by which individuals meet objectives and assigned tasks. These interventions help people gain interpersonal competence, work through interpersonal conflicts, and develop effective groups. These predominantly focus on communication, problem resolution, and participation in decision-making. Interventions include teambuilding, laboratory training (role-playing, simulations and online learning), survey feedback, coaching, inter-group interventions, and accompanying measures such as consultation. (2) Human resource interventions aim at skill development in order to improve member performance and wellness. Practices include management by objectives, the system of promotion and rewards, career management, as well as coaching, mediation, leadership training, and diversity interventions; the latter are also applicable to CPM. Therefore, these two types of interventions closely resemble elements of conflict prevention as well as measures of conflict management that are part of CPM systems.

2.3 Alternative Research Fields

While, for the purpose of this dissertation, organizational development serves as theoretical and conceptual frame, organizational conflict management is also approached from other fields, which again influence this research. The following section presents some of the other fields and gives reasons why this dissertation follows a different perspective. For example, management research is particularly interested in questions regarding the effects on leadership roles when conflict management is introduced, including questions on mandates, confidentiality, and sanctioning power. Despite team science research on research collaborations and the publication of managerial guides, there is a lack of knowledge on the management of collaborative projects, including, in particular, transdisciplinary research projects (vom Brocke and Lippe, 2015, Calamel et al., 2012, Adler et al., 2009). Hence, this dissertation may be approached from a management perspective by, for example, investigating the impact of conflict management on project coordination and on team leaders. However, although touching management questions and understanding conflict management systems as a support tool for management (Löhr et al., 2017a, 2017c, Papers 3 and 4 (chapters 3.3 and 3.4)), this dissertation's research focus is broader. By analyzing system effects on the organization (project) level as well as on project members across the hierarchy, it does not exclusively focus on managerial members.

Much of the economics oriented research puts a strong focus on conflict cost and the search for best fit formulas of measuring conflict cost reduction to prove the benefits of conflict management (KPMG, 2009, Dana, 1999, Ahrens, n.d.). Whilst reduction of conflict cost is also an aim of this dissertation, the identification of suitable conflict cost indicators and the development of a formula that allows the calculation of conflict cost reduction in the context of a research project is beyond the scope of this dissertation. Thus, economic aspects are only touched upon briefly in this work, along with some suggestions for further research.

Much conflict management research originates from the perspective of the field of law: with the introduction of alternative resolution mechanisms, a trend toward increased self-regulation in employment law occurred (Roche and Teague, 2014, Menkel-Meadow, 2009). From this perspective, conflict management raises questions about its mandates and its sanctioning power, as well as legal implications for clients (stakeholders) and (legal) practitioners (lawyers and mediators); these are also linked to ethical questions. While for legal cases, certain protections, like attorney-client privilege, play a significant role, such protection does not equally apply to conflict management practitioners and their clients (Costantino, 2009, Lipsky and Avgar, 2004). Research also investigates the effects of legal orders and new obligations accompanying the increasing acceptance and promotion of alternative dispute resolution by legal norms. While conflict management implementation in a research project is also connected to some of the aforementioned legal questions, this study only indicates thematic connections, for example raising issues on the mandate of CPM or ethical issues that arise when CPM is introduced in a highly heterogeneous work setting.

3

CPM-System in Transdisciplinary Research Projects: The Papers

3.1 Paper 1

Drivers of Conflict and Possible Project Failure in a Transdisciplinary Research Project

LÖHR, K., BONATTI, M., HOMEN, L., SCHLINDWEIN, S. & SIEBER, S. 2018.
Operational challenges in collaborative research projects: addressing conflict multidimensionality. Kybernetes, Vol. 47 Issue: 6, pp.1074-1089,
<https://doi.org/10.1108/K-04-2017-0124>.

3.2 Paper 2

The Impact of Organizational Structures of Transdisciplinary Research Projects on Conflict Management System Design

LÖHR, K., HOCHMUTH, C., GRAEF, F., WAMBURA, J. & SIEBER, S. 2017a.

Conflict management programs in trans-disciplinary research projects: the case of a food security project in Tanzania. Food Security.

DOI: 10.1007/s12571-016-0643-1

3.3 Paper 3

The Implementation of a Conflict Prevention and Management System in a Transdisciplinary Research Project

LÖHR, K., GRAEF, F., BONATTI, M., MAHOO, M., WAMBURA, J. A. & SIEBER, S. 2017b. Conflict management systems for large scientific research projects. *International Journal of Conflict Management*, 28, 322–345.
DOI: 10.1108/IJCMA-04-2016-0022.

3.4 Paper 4

Evaluating the Effects of a Conflict Prevention and Management System in a Transdisciplinary Research Project

LÖHR, K., WEINHARDT, M., GRAEF, F. & SIEBER, S. 2017c. Enhancing collaboration and effectiveness in collaborative research projects through conflict management systems: Analyzing the case of a food security project. *Organizational Dynamics*. DOI:10.1016/j.orgdyn.2017.10.004

4

Conclusions, Implications and Recommendations

4.1 Summary of Results

The aim of this dissertation is to analyze the effects of a conflict management system in a transdisciplinary research setting, using a food security research project as its case study. Research indicates that the effect of a conflict management system in a transdisciplinary research environment is positive. Figure 5 summarizes the research process, stating the research questions, methods applied, and key findings.

In the first step of this dissertation, organizational analysis is applied using a combination of qualitative and quantitative methods in order to analyze the drivers within a transdisciplinary research project that make such an organizational setting prone to conflict, if not project failure (Löhr et al., 2018, Löhr et al., 2017a, Papers 1 and 2 (chapters 3.1 and 3.2)). The dissertation finds that multiple conflict drivers impact scientific research collaboration (Löhr et al., 2018, Paper 1 (chapter 3.1, table 1)). The conflict drivers that can cause operational malfunctioning or even project failure are, on the one hand, found to be connected to management related tasks and, on the other, directly linked to the project's complex structure, with project members coming from different countries, institutions, and disciplines, communicating mainly by virtual means for a limited period of time in the frame of third party funding. While a careful balancing of diverging disciplines, organizations, and cultures – each bringing in a variety of different norms, rules, and behavioral expectations – is found to be important, the dissertation also finds that the impact of virtual communication and the influence of the donor agency must not be underestimated as conflict drivers during project implementation. The findings support the first hypothesis (H1) that organizational complexity makes transdisciplinary research projects prone to conflict and possible project failure.

Furthermore, it is found that conflict drivers do not function in isolation, but interact (Löhr et al., 2018, Paper 1 (chapter 3.1, table 2)), making systemic perspectives on processes and management necessary (Löhr et al., 2018, Paper 1 (chapter 3.1, figure 2)). While investigations into the drivers of conflict in research projects are not scarce, studies typically focus on a single driver. Although it offers the opportunity to move beyond one-dimensional analysis and to apply a broader perspective on conflict dynamics, systemic analysis of conflict drivers' interrelations, as applied in this dissertation's first paper, is not yet prominent.

Conflict Prevention and Management (CPM) System in Transdisciplinary Research Collaborations: Potential and Constraints. The case of an international food security research project.									
Objective	Research Questions (RQ)	Methods					Findings		
		IDI	FG	WoCa	ES	OS			
To analyze the design and effects of a conflict management system in an international, transdisciplinary research setting.	RQ 1 What are the drivers in a transdisciplinary research project that make such organizational setting prone to conflict and possible project failure?	○	○	○		+	<ul style="list-style-type: none"> Collaborative projects are made up of members coming from different countries, institutions, and disciplines that communicate mainly by virtual means for a limited period of time in the frame of third party funding. Conflict drivers impacting scientific research collaboration are manifold. The conflict drivers do not function in isolation, but interact. The conflict drivers are connected to management related tasks and to the project's complex structure. 		
	Paper 1								
	RQ 2 Is it possible to transfer a conflict management model developed for a business context to a transdisciplinary research environment?	+	+	+			<ul style="list-style-type: none"> Model transfer from a domestic, business context to an international, transdisciplinary research environment is possible, although conceptual adaptations are required. Conflict prevention needs to be integrated in the model. A decentralized system structure is crucial to account for project structure. Findings result in a conceptual adaptation of the Viadrina model. The resulting CPM-System can serve as a conceptual frame for future projects. 		
	Paper 2								
	RQ 3 What effect does a conflict management system have on communication and collaboration in a transdisciplinary research project?	○	○			+	<ul style="list-style-type: none"> A CPM-System facilitates communication and collaboration, and contributes to project team effectiveness. A CPM-System prevents conflicts. A CPM-System increases the levels of trust. A great majority of project members recommend including a CPM-System in every large interdisciplinary research project. 		
	Paper 4								

+: applied ○: indirect
 IDI: Individual Interviews ES: E-Mail Survey
 FG: Focus Group OS: Online Survey
 WoCa: World Café

Figure 5: Overview of Research Design and Corresponding Findings, own design.

Following organizational analysis, the design of the conflict management system is analyzed in relation to the project's organizational characteristics (Paper three). The aim of this step is to analyze if it is possible to transfer a conflict management model from a business context to a transdisciplinary research environment (RQ2). It is found that the model transfer is possible, although modifications to fit the particularities of a research environment are required, thus supporting hypothesis 2 (H2). In an international, transdisciplinary research setting that is highly heterogeneous and time-limited, it is important that measures of conflict prevention be integrated in order to facilitate communication and collaboration, thus helping to prevent the escalation of conflicts, while facilitating the team's research efforts. The integration of preventive measures is supported by Gilin Oore, Leiter and LeBlanc (2015), who find positive effects of organizational interventions, including individual training, work group conflict training, and mediation on workplace conflict. The established need to integrate a component of prevention also aligns with other so-called integrated models of conflict management that advocate the combination of conflict prevention and management in one model (SPIDR, 2001, Lynch, 2001, Costantino and Merchant, 1996). Furthermore, a decentralized system structure is found to be crucial in order to account for the heterogeneous and decentralized nature of transdisciplinary research projects, while considering project member diversity in terms of nationality, race, gender, status, and age. This concerns agency and social representation when it comes to setting up the conflict prevention and management system, including the selection of conflict contact points and conflict processors.

The research findings result in a conceptual adaptation of the Viadrina model by including a component of conflict prevention. This adapted model of conflict prevention and management (CPM-System) (Löhr et al., 2017a, Paper 3 (chapter 3.3, figure 1)) can serve as a conceptual frame for future international and inter-organizational projects that plan to integrate conflict prevention and management measures into their organizational structure.

In the last part (Löhr et al., 2017b, Paper 4 (chapter 3.4)), evaluation of system functioning is applied in order to analyze the effects of CPM-System on communication and collaboration within an international and transdisciplinary research project (RQ3). Findings indicate that the CPM-System, as an organizational support tool, is effective, particularly with regards to improving communication and interactions between project members, and is also being perceived as increasing project effectiveness (Löhr et al., 2017b, Paper 4 (chapter 3.4, figure 1)). CPM-System also increased the levels of trust that are crucial for collaboration and the formation of future collaborations (Bennett and Gadlin, 2012, Stokols et al., 2008a, 2008b). A positive perception of CPM-System is found throughout all working positions in the case study project, with a great majority recommending the use of such system in other projects. While these results encourage integrating CPM-System into future projects, this initial empirical evidence only tentatively supports hypothesis 3. CPM-System is only applied in one case study and the effects are solely measured based on project members' perceptions. Further, a causal relationship between CPM-System and conflict prevention or project effectiveness is not yet proven.

4.2 Implications

This dissertation contributes to the growth of empirical knowledge on the operational functioning of both transdisciplinary research projects and conflict management systems. This dissertation obtains new insights and knowledge on implementing CPM systems in a type of organization where CPM is still novel. As the integration of a CPM system within the project design was approved by the BMBF, a rare opportunity to research conflict management systems in an organizational setting where such systems are not yet prominent as well as to conduct accompanying research over the course of the project's life-time was provided. This allowed in-depth analysis of organizational structures and their impact on conflict management design, a link often neglected (Amsler et al., 2015, Roche and Teague, 2014, 2012, Budd and Colvin, 2014, Lipsky and Avgar, 2004), as well as continuous evaluation of CPM processes. Thereby, extensive data on project functioning, conflicts, and their management was obtained. Such insight is often considered rare and difficult to obtain in the context of competitive scientific research environments, which typically resist internal evaluation and the public disclosure of challenges (Zscheischler and Rogga, 2015, Bennett and Gadlin, 2012).

Overall results are encouraging, showing positive effects of a CPM system in an international and transdisciplinary research project. (1) This dissertation's results indicate positive effects on transdisciplinary research collaboration; and (2) in combination with empirical evidence from other organizational settings (PwC and Viadrina, 2016, Gilin Oore et al., 2015, Bendersky, 2007) encourage integrating CPM systems in further projects, thereby increasing the number of cases to be researched and allowing comparison. In addition, (3) first spill-over effects support the positive findings of CPM and indicate that CPM exerts an impact beyond the project level. Former Trans-SEC members (a) integrated CPM in subsequent projects, as in the case of Scale-N on food security and nutrition (www.scale-n.org); (b) set up CPM structures in their home institutions, as in the case of the Tanzania Federation of Cooperatives (TFC); (c) requested CPM workshops at their home institutions; and (d) apply CPM knowledge beyond the working context, for example, on the community and family level (Löhr et al., 2017d).

The positive results across hierarchies of implementing CPM-System in a research setting should encourage both project coordinators and funding agencies to continue integrating and funding accompanying team support structures. Project coordination should continue integrating CPM systems in project proposals and, even if not financially supported by the funding institution, allocate time and resources to meta-communication processes. For example, by integrating team-building or reflection sessions into the agenda of annual status meetings, inviting external moderation to board meetings, supporting an open conflict culture with regards to their own communication and conflict management behavior, and providing external conflict management services on demand for all staff members, conflict prevention and management is facilitated. This requires project members to acknowledge the operational challenges of their work environment and to allocate resources to such additional team processes beyond work related tasks. Funding agencies should support the integration of team support structures more explicitly, for example by (1) approving

the allocation of funds for such meta-communication processes; (2) integrating it in their funding policies; and (3) evaluating project proposals that acknowledge operational challenges and integrate support mechanisms in the project design more positively.

4.3 Limitations and Further Research

While the findings indicate positive effects of CPM-System in transdisciplinary research projects, this study is exploratory, thus providing a starting point for future research. Further research is needed to validate and generalize findings, as integrating CPM systems in transdisciplinary research projects is still fairly new. Following a case study approach, this dissertation's model design and evaluation of effects is based on a single project and the project members' perception. While reasons to adjust the model by adding a conflict prevention component appears plausible, it is critical to verify the findings by taking into account other models and empirical findings beyond the research setting. Additionally, the effects of CPM-System, in particular its causal relations to organizational functioning, need further research. While project members perceive CPM-System to positively affect communication and collaboration – including conflict reduction and project output – it is not possible to establish causal relations to increased project output with this study's research design. Further, underlying this study is the assumption that a complete CPM system functions more effectively than integrating individual components, such as an organizational ombudsperson or a mediator on demand. The assumed superiority of a CPM system over individual measures needs testing and might be of particular importance in an organizational setting that is temporary and highly restricted financially. Empirical evidence on this issue is also scarce beyond the project environment and the initial studies are inconclusive (Roche and Teague, 2012, Bendersky, 2007).

Comparative studies are necessary to test and verify the findings of this dissertation. More robust results could be obtained by comparing conflict perceptions and outcomes in one project before and after the introduction of a CPM system or by, alternatively, comparing similar projects with and without such a system. Another research path is the development of conflict cost indicators that would enable the calculation of CPM success in monetary terms. However, quantifying variables might be challenging considering that research projects are temporary organizations that are newly established with no prior work history, no records regarding staff changes, no publications, or no expenses for conflict management available. Consequently, average values need to be established, for example by means of ex post evaluation of completed projects. Another further challenge comes from the fact that generally agreed upon indicators for measuring the success of transdisciplinary research projects do not yet exist.

Further research is also needed on the scope of CPM intervention. While the CPM mandate for the Trans-SEC case was primarily on internal conflict between project members, transdisciplinary research projects tend to have high stakeholder involvement, with conflict also occurring between project members and stakeholders or between stakeholders. Therefore, stakeholder conflict can also hamper project success. This means that it is critical to determine the scope of the system carefully when integrating a CPM system into

the project's design. This decision must be made quite carefully and the mandate of CPM communicated clearly and early to project members in order to prevent confusion; doing so will prevent its capacities from being exceeded.

This shows that collaboration challenges and conflict management systems in transdisciplinary research projects provide much scope for further research. This dissertation's study provides much needed insight on the research topic; in particular its findings supporting CPM systems in transdisciplinary research. Thus, a significant contribution to filling the research gap is made: it is possible to facilitate a productive research environment that enables a diversity of actors from multiple countries, disciplines, and organizations to collaborate successfully in the search for sustainable solutions to complex real-world problems such as food security and hunger.

5

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6

Annex

Annex 1: Questionnaire Guide Individual Interviews September 2013

Annex 2: Questionnaire Guide Focus Group Discussion September 2013

Annex 3: Questions World Café Session September 2013

Annex 4: Questionnaire Guide Individual Interviews September 2014

Annex 5: Questionnaire Guide Focus Group Discussion September 2014

Annex 6: Questionnaire Guide Individual Interviews September 2015

Annex 7: E-Mail Survey Conflict Contact Points September 2015

Annex 8: Online Survey Questionnaire 2016

Annex 1

Questionnaire Guide

Individual Interviews September 2013

Interview Part

- 1) Briefly, please state your name, your role/position in the Trans-SEC project and the name of the institution/organisation you work for.
- 2) Before the conference, have you been aware that a CPM-System is part of the Trans-SEC project?
- 3) Does your institution have a conflict solving mechanism in place that helps when conflicts arise at the work place?

If YES:

- a) How does it function? Of which elements does it consist (e.g. external support person, supervision, etc.)?
- b) Were you able to gain experience with the conflict solving system of your institution?
- c) Were you satisfied with the structures provided?
- d) Did you miss anything or had you hoped for other support structures?

If NO: How do you address/deal with conflicts at work usually (e.g. with colleagues, with superiors)?

- 1) From your prior working experience, in which areas do you see conflict potential within our project? (Which conflicts might occur within our project?)
- 2) What kind of support do you need when a conflict in our project arises? (Which structures do you regard as essential for our conflict prevention and moderation system in the context of our research project?)
- 3) What are specific characteristics of a research environment (in comparison to a business environment)?
- 4) Which recommendations do you have for our CPM-System?
- 5) What would hinder you from using the system?
- 6) Any more remarks/wishes on the CPM-System?

Thank You.

Annex 2

Questionnaire Guide

Focus Group Discussion September 2013

1. Introduction

My name is _____ and I will be leading this session with the help of _____.

Thank you for agreeing to take part in this exercise. We want to talk to you about the Conflict Prevention and Moderation Systems model that will be introduced to the project. We want you to be open, honest and critical. We will be recording this session; the feedback will be used for the report writing and application of the model within the Trans-SEC project. However, everything you say is confidential and individual names will not be mentioned anywhere.

There are a few basic rules for this session.

- 1) There are no bad opinions. Speak your mind. Be honest.
- 2) Let everyone have a chance to speak.
- 3) Don't interrupt but if you disagree, speak out when the person has finished speaking.
- 4) Out of respect for one another anything discussed in this group should be kept confidential.

Last but most importantly...

- 5) Relax and have fun!

2. Participant Introductions

Now, can you each in turn introduce yourself to the group indicating your name, profession and nationality?

3. Intercultural work experience within Trans-SEC project

- 1) What experience do you find to be stressful when working in a multicultural team?
- 2) How do you deal with such stressful situation?
- 3) What kinds of conflict prevention services are available in your institute?
- 4) What can be done to avoid conflicts in a multicultural work environment?
- 5) What kind of assistance can be given by the project management to prevent conflicts, or manage them from escalation within the project?
- 6) What do you need to make the work environment in a multicultural team more comfortable?
- 7) Who do you share your multicultural problems within a project with?
- 8) What is a good multicultural work environment for you?

4. CPM-Systems

- 1) What is your opinion about CPM-Systems?
- 2) What is the most efficient and effective way to implement CPM-Systems?
- 3) What kind of obstacle do you think CPM-Systems might face?
- 4) How can we overcome the above obstacles?
- 5) Would you feel comfortable taking part in the implementation of the CPM-systems?
- 6) Do you think CPM-Systems will improve the positivity of the work environment within the project?

5. Transfer Business to Research Context

- 1) What are the differences between a business and a research environment?
- 2) What are characteristics of a research environment/team work (in comparison to business environment)?
- 3) Do you think that tools of management theory can be transferred/applied to a research context?
- 4) What could be challenges/obstacles to transfer tools from the business industry to the research sector?

Do you have any other general questions, comments or advice regarding CPM-Systems?

6. Close and thanks

Thank you very much for participating in this exercise. Your feedback has been really helpful and we take it very seriously. I hope we will get to talk some more in the future.

Annex 3

Questions World Café Session September 2013

First Round: Which kind of challenges could occur in Trans-SEC?

Second Round: What kind of measures and tools do we need?

Third Round: Which guidelines do you regard as important for a Code of Conduct for Trans-SEC?

Fourth Round: Which vision do you have for the overall outcome of Trans-SEC?

In each round you visit two tables.

Annex 4

Questionnaire Guide

Individual Interviews September 2014

- 1) How do you perceive the overall coordination of Trans-SEC?
- 2) How do you perceive the intercultural relationships in Trans-SEC?
- 3) And are there any cultural issues or misunderstanding you are facing in Trans-SEC?
- 4) How is the communication in Trans-SEC in general?
- 5) Do you have any work related fears?
- 6) How is interdependence in relation to work packages?
- 7) What is the experience with regards to full participation to the project issues?
- 8) What is your opinion about CPM-System?
- 9) Is the objective of CPM-System clear to you?
- 10) Does the objective make sense in relation to Trans-SEC?
- 11) Does CPM-System apply to the needs of the Trans-SEC project?
- 12) Would you feel comfortable in using CPM-System in case of a conflict?
Would you feel comfortable approaching someone as contact person who is junior to you?
Would you feel comfortable approaching someone as contact person who is senior to you?
- 13) Is there anything else on CPM-System that you want to say?
- 14) Do you have any other recommendations?

Thank You.

Annex 5

Questionnaire Guide

Focus Group Discussion September 2014

- 1) How do you perceive the overall coordination of Trans-SEC?
- 2) How do you perceive the intercultural relationships in Trans-SEC?
- 3) And are there any cultural issues or misunderstanding you are facing in Trans-SEC?
- 4) How is the communication in Trans-SEC in general?
- 5) Do you have any work related fears?
- 6) What is your opinion about CPM-System?
- 7) Is the objective of CPM-System clear to you?
- 8) Does CPM-System apply to the needs of the Trans-SEC project?
- 9) Would you feel comfortable in using CPM-System in case of a conflict?
Would you feel comfortable approaching someone as contact person who is junior to you?
Would you feel comfortable approaching someone as contact person who is senior to you?
- 10) Is there anything else on CPM-System that you want to say?
- 11) Do you have any other recommendations?

Thank You.

Annex 6

Questionnaire Guide

Individual Interviews September 2015

- 1) Have you come across any conflicts within the Trans-SEC project?
If YES:
 - a) What type of conflict?
 - b) Which conflict level?
 - c) What triggered the conflict?
- 2) Was the conflict resolved?
If YES: how?
If NO: why not?
- 3) Did you use CPM-System? Or knowledge you gained from CPM training?
If YES: how were the processes and the outcome?
If NO: why not? And how did you resolve it?

Are there any other options?
Who should be involved?
- 4) How is the level of collaboration between the Trans-SEC consortium and the CPM-team?
- 5) Has anyone approached you as in your function as CCP? (only if CCP is interview partner)

If YES: What was the outcome?
If NO: Why do you think people do not approach you yet?
- 6) Were there any success stories? (only if CCP is interview partner)
- 7) What have you learned as a result of CPM-System within Trans-SEC?
- 8) What types of skills related to CPM-System have you acquired?
- 9) Where there any intercultural changes influenced by CPM-System on individuals at project level?
- 10) To what extent do changes appear to be related to CPM-System?

Annex 7

E-Mail Survey Conflict Contact Points September 2015

Question 1: What was your motivation to take up the position as Conflict Contact Point/Focal Person?

Please write here:

Question 2: How many times have you been contacted in your role as Conflict Contact Point/Focal Person over the past 12 months?

Number:

Question 3: How many times did you detect a conflict and approached people yourself in your role as Conflict Contact Point/Focal Person over the past 12 months?

Number:

Question 4: How did you assist the conflicting party or parties?

(more than one answer possible)

- 1) reflection/coaching of a single party (YES or NO):
- 2) mediation/conversation with both parties (YES or NO):
- 3) transfer to a third (external) person for assistance: (YES or NO):
- 4) other (please specify):

Question 5: Please describe with a few words each conflict you assisted (e.g. conflict between two scientists of different nationality and institution)

Please write here about one sentence per conflict:

Question 6: Please state the 3 most important lessons you took away from the CPM workshops/trainings on conflict awareness?

- 1)
- 2)
- 3)

Question 7: Where did you use the knowledge you gained during the CPM workshop/training? (more than one answer possible)

- 1) In Trans-SEC for conflict management (YES or NO):
- 2) Outside Trans-SEC but work related for conflict management (YES or NO):
- 3) At home for conflict management (YES or NO):
- 4) Other (please specify) (YES or NO):

Question 8: Is there anything that you need in addition to fulfill your role as Conflict Contact Points/Focal Person?

Please write here:

Question 9: Please give feedback/recommendations for the further development of the CPM structure (what would you change, what would you keep, which ideas crossed your mind):

Please write here:

Question 10: Other Trans-SEC project members often ask for success stories: If you have a CPM success story (e.g. conflict solved successfully, introduction of CPM structures in your organization etc.), then please let us know! Thanks for sharing!

Please write here:

Question 11: Overall, what is your opinion on the introduction of the CPM structure in Trans-SEC?

Please write here:

All information is confidential.

Thank you for filling out this form!

Annex 8

Online Survey Questionnaire 2016



Thank you for taking part in the CPM survey!

In the next 15 minutes we will ask you questions on CPM-System and conflict experience in Trans-SEC. Please remember, the survey is anonymous and your responses will be treated with full confidentiality.

We would like to start with some general questions.

1. Please indicate your gender.

- ☐ Female ☐ Male

2. What is your nationality?

- ☐ German
☐ Tanzanian
☐ Other (please specify): _____

3. For how long have you been working in Trans-SEC?

Please choose one of the following options.

- ☐ I work in Trans-SEC since its beginning in 2013.
☐ I joined Trans-SEC later but I am still a member.
☐ I am no longer working for Trans-SEC.

4. What is your position in Trans-SEC?

- ☐ Junior Scientist (Bachelor, Master or PhD student, post-doc)
☐ Senior Scientist (beyond post-doc)
☐ Non-scientific member (e.g. accountant, technical staff, driver)
☐ Something else (please specify) _____

5. We would like to ask you a few questions on the conflict prevention and management system (CPM) in Trans-SEC.

	Yes	No
Before this survey, were you aware that a CPM-System is part of Trans-SEC?	<input type="radio"/>	<input type="radio"/>
Have you worked in research projects before that integrated activities on conflict prevention and management?	<input type="radio"/>	<input type="radio"/>

6. The CPM team invited all Trans-SEC member to provide their input on the development of the CPM program. Have you participated in any of the following CPM activities to share your thoughts?

I participated in...	Yes	No
an interview on CPM.	<input type="radio"/>	<input type="radio"/>
a focus group discussion on CPM.	<input type="radio"/>	<input type="radio"/>
the World Café session on CPM at the kick-off meeting in 2013.	<input type="radio"/>	<input type="radio"/>

7. CPM offers a range of activities and services to Trans-SEC members. Have you participated in or made use of any of the following CPM activities and services?

I participated in...	Yes	No
a teambuilding/ team reflection session.	<input type="radio"/>	<input type="radio"/>
a workshop on conflict awareness.	<input type="radio"/>	<input type="radio"/>
a (board) meeting moderated by a CPM consultant.	<input type="radio"/>	<input type="radio"/>
four fix meetings with a CPM consultant for reflection of supervisory duties.	<input type="radio"/>	<input type="radio"/>
a coaching session.	<input type="radio"/>	<input type="radio"/>
a mediation.	<input type="radio"/>	<input type="radio"/>

8. Conflict contact points/Focal persons were installed in each Trans-SEC institution as part of the CPM structure.

Please consider the following statements. To what extent do you agree or disagree?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Having one conflict contact point/focal person per institute is the ideal structure for a project like Trans-SEC.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The selection process of conflict contact points/focal persons was satisfying for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Following a CPM initiative, a Code of Conduct was developed for the project. How useful was the Code of Conduct for your work in Tran-SEC?

1	2	3	4	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not at all useful	Somewhat useful	Quite useful	Very useful	Was not aware it existed.

The next few questions deal with a range of activities and services provided by the CPM team. Possibly you remember some of these activities and services without linking them to CPM.

10. Which of the CPM activities and services mentioned here do you consider most relevant for a CPM- System in projects like Trans-SEC?

Please select up to five elements by double clicking on them in the preferred order.

Alternatively, you can drag and drop them into the list on the right.

CPM introduction session	Participation CPM design process	Most important 2 3 4 5
Project internal conflict contact points	Training of internal conflict contact points	
Teambuilding/Team reflection sessions	Workshops on conflict awareness	
Code of Conduct	External facilitation of (board) meetings	
Individual coaching for all staff	Mediation services for all staff	
Jour fix meetings for line / project managers		

11. Which of the CPM activities and services mentioned here do you consider least important for a CPM- System in projects like Trans-SEC?

Again, please select up to five elements by double clicking on them in the preferred order.

Alternatively, you can drag and drop them into the list on the right.

CPM introduction session	Participation CPM design process	Least important 2 3 4 Dropped fifth.
Project internal conflict contact points	Training of internal conflict contact points	
Teambuilding/Team reflection sessions	Workshops on conflict awareness	
Code of Conduct	External facilitation of (board) meetings	
Individual coaching for all staff	Mediation services for all staff	
Jour fix meetings for line / project managers		

12. Please consider the following statements. To what extent do you agree or disagree?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Throughout the project, the information that was provided about CPM was clear and understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The overall communication with the CPM team was clear and effective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. In the following we ask you on your experience of conflicts in Trans-SEC.

By conflict we mean an interactive process manifested in incompatibility, disagreement, or dissonance within or between social entities such as organizations, groups, or individuals.

	None at all 1	Very little 2	Some 3	A lot 4	A great deal 5
From your point of view, how much conflict was there present in Trans-SEC over the whole span of the project?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. And now about your personal experience.

	None at all 1	Very little 2	Some 3	A lot 4	A great deal 5
How much conflict did you personally experience in Trans-SEC?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Did any of the following situations occur to you during your time with Trans-SEC?

	Never 1	Rarely 2	Sometimes 3	Often 4	Very often 5
I experienced interpersonal animosity, tension, or annoyance with other project members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I severely disagreed with other project members about the content of decisions because of differences in viewpoints, ideas, and opinions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was in disagreements about assignments of duties and resources for task accomplishment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was in disagreement about logistical issues (e.g. for field stays or conferences)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. How much did the following factors contribute to the disagreements and conflicts you experienced?

	Not at all 1	Very little 2	Somewhat 3	A lot 4	A great deal 5
Disagreement between different scientific disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A lack of written instructions and unclear formal requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diverging research concepts or methodology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donor regulations and funding requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal hierarchies between subordinates and their line managers and supervisors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Different institutional working cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intercultural aspects or differences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virtual (non face-to-face) communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The limited project lifespan (3-5 years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ill-defined working structures and responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. How much did these issues or conflicts you experienced interfere with your project work?

Please remember, the survey is anonymous and your responses will be treated with full confidentiality.

	Strongly disagree 1	Disagree 2	Neither Agree Nor Disagree 3	Agree 4	Strongly agree 5	Don't want to say
The conflict caused me to spend a lot of time on things other than my actual work duties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experienced more stress at work than without this conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The outcomes of my work in the project could have been better if it hadn't been for the conflict I experienced.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I thought of leaving/left the Trans-SEC project because of unresolved conflicts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I stayed away from work because of unresolved conflicts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I withheld information or used other uncooperative behavior because of the conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. When you experienced those issues and conflict(s) you mentioned before, did you make use of the CPM- System/Support Services for solving it?

- ☐ Yes ☐ No

19. Why did you not consider to contact members of the CPM- team such as a focal person, a conflict contact point or an external consultant?

Multiple answers are possible.

- ☐ I did not consider this a case for CPM.
- ☐ I did not trust the CPM system.
- ☐ I did not think that contacting CPM would make any difference.
- ☐ Contacting CPM staff felt difficult for me.
- ☐ I preferred to speak to someone in a management capacity.
- ☐ Some other reason (please specify)

20. Which CPM services did you use?

Please select each option that applies to you.

- ☐ I approached a focal person/conflict contact point for reflection or conflict management.
- ☐ I approached the external CPM consultant for reflection (coaching) or conflict management (mediation).
- ☐ Something else: (please specify)

21. When contacting CPM staff, did you receive a response and support in a timely manner?

- ☐ Yes ☐ No

22. Was it useful for you to contact CPM staff?

- ☐ Yes, the situation improved a lot.
- ☐ Yes, the situation changed somewhat for the better.
- ☐ No, the situation remained the same.
- ☐ No, the situation got worse.
- ☐ Something else: (please specify)

23. How do you evaluate the impact of CPM on Trans-SEC overall?

Please respond to the following statements.

	Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
CPM created an open and trustful work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM reduced internal conflict in Trans-SEC.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM increased project's outputs such as deliverables and scientific publications by tackling project-internal conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM prevented the escalation of conflict	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM resources should be spent on field research related activities instead.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM facilitated intercultural understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM improved communication among Trans-SEC members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM built inter-organizational trust and fostered the establishment of networks for future cooperation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM helped to address inter-cultural conflicts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. How about yourself? Did CPM change anything about how you see and respond to conflict situations?

Please respond to the following statements.

	Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
I am now much more aware of conflicts in my work environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM does not make any difference to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM made me address problems openly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personally, I would recommend including a CPM system in every large interdisciplinary research project.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM provided me with knowledge and skills on conflict management that I can use beyond Trans-SEC.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CPM did improve the way I handle conflicts in the interaction with colleagues and also in my private life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Conflicts may not only occur between project members, but also between project members and stakeholders.

Have you personally experienced any conflicts when working with the Trans-SEC stakeholders?

- ☐ No, I did not experience any conflict when working with stakeholders.
- ☐ Yes, there was some conflict with stakeholders.
- ☐ I have not been in direct contact with Trans-SEC stakeholders.

26. What kind of conflicts have you personally experienced with Trans-SEC stakeholders?

Multiple answers are possible.

- ☐ There was a misunderstanding because of language problems.
- ☐ There was disagreement on organizational matters.
- ☐ My behavior was perceived as inappropriate.
- ☐ There was a lack of mutual trust in the cooperation.
- ☐ The stakeholder did not fulfill the assigned project tasks.
- ☐ Something else (please provide some detail)

These are our final two questions.

26. Overall, how satisfied or dissatisfied were you working for Trans-SEC?

Please provide your answer on a scale from 0 to 10.

0	1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not at all satisfied					Extremely satisfied					

27. Is there anything else that you would like to feedback on CPM?

If yes, please fill in the space provided.

Thank you for completing this questionnaire!

We would like to thank you very much for helping us.

Your answers were transmitted, you may close the browser window or tab now.

[Katharina Loehr, Trans-SEC - Innovating Strategies to safeguard Food Security using Technology and Knowledge Transfer: A people-centred Approach](#), Leibniz-Centre for Agricultural Landscape Research (ZALF) e.V.

Eigenständigkeitserklärung

Hiermit erkläre ich, die Dissertation selbstständig und nur unter Verwendung der angegebenen Hilfen und Hilfsmittel angefertigt zu haben.

Ich habe mich anderwärts nicht um einen Doktorgrad beworben und besitze keinen entsprechenden Doktorgrad. Ich erkläre, dass ich die Dissertation oder Teile davon nicht bereits bei einer anderen wissenschaftlichen Einrichtung eingereicht habe und dass sie dort weder angenommen noch abgelehnt wurde.

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Weiterhin erkläre ich, dass keine Zusammenarbeit mit gewerblichen Promotionsbearbeiterinnen/Promotionsberatern stattgefunden hat und dass die Grundsätze der Humboldt-Universität zu Berlin zur Sicherung guter wissenschaftlicher Praxis eingehalten wurden.

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I hereby declare that I completed the doctoral thesis independently based on the stated resources and aids.

I have not applied for a doctoral degree elsewhere and do not have a corresponding doctoral degree. I have not submitted the doctoral thesis, or parts of it, to another academic institution and the thesis has not been accepted or rejected.

I declare that I have acknowledged the Doctoral Degree Regulations which underlie the procedure of the Faculty of Agricultural and Horticultural Sciences (Humboldt-University), as amended on 14th July 2005.

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Berlin, 2017

Katharina Löhr